IAEA Safety Standards

for protecting people and the environment

Arrangements for Public Communication in Preparedness and Response for a Nuclear or Radiological Emergency

Jointly sponsored by

General Safety Guide

No. GSG-14

IAEA
International Atomic Energy Agency

IAEA SAFETY STANDARDS AND RELATED PUBLICATIONS

IAEA SAFETY STANDARDS

Under the terms of Article III of its Statute, the IAEA is authorized to establish or adopt standards of safety for protection of health and minimization of danger to life and property, and to provide for the application of these standards.

The publications by means of which the IAEA establishes standards are issued in the **IAEA Safety Standards Series**. This series covers nuclear safety, radiation safety, transport safety and waste safety. The publication categories in the series are **Safety Fundamentals**, **Safety Requirements** and **Safety Guides**.

Information on the IAEA's safety standards programme is available on the IAEA Internet site

https://www.iaea.org/resources/safety-standards

The site provides the texts in English of published and draft safety standards. The texts of safety standards issued in Arabic, Chinese, French, Russian and Spanish, the IAEA Safety Glossary and a status report for safety standards under development are also available. For further information, please contact the IAEA at: Vienna International Centre, PO Box 100, 1400 Vienna, Austria.

All users of IAEA safety standards are invited to inform the IAEA of experience in their use (e.g. as a basis for national regulations, for safety reviews and for training courses) for the purpose of ensuring that they continue to meet users' needs. Information may be provided via the IAEA Internet site or by post, as above, or by email to Official.Mail@iaea.org.

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The IAEA provides for the application of the standards and, under the terms of Articles III and VIII.C of its Statute, makes available and fosters the exchange of information relating to peaceful nuclear activities and serves as an intermediary among its Member States for this purpose.

Reports on safety in nuclear activities are issued as **Safety Reports**, which provide practical examples and detailed methods that can be used in support of the safety standards.

Other safety related IAEA publications are issued as **Emergency Preparedness and Response** publications, **Radiological Assessment Reports**, the International Nuclear Safety Group's **INSAG Reports**, **Technical Reports** and **TECDOCs**. The IAEA also issues reports on radiological accidents, training manuals and practical manuals, and other special safety related publications.

Security related publications are issued in the **IAEA Nuclear Security Series**.

The **IAEA Nuclear Energy Series** comprises informational publications to encourage and assist research on, and the development and practical application of, nuclear energy for peaceful purposes. It includes reports and guides on the status of and advances in technology, and on experience, good practices and practical examples in the areas of nuclear power, the nuclear fuel cycle, radioactive waste management and decommissioning.

ARRANGEMENTS FOR PUBLIC COMMUNICATION IN PREPAREDNESS AND RESPONSE FOR A NUCLEAR OR RADIOLOGICAL EMERGENCY

The Agency's Statute was approved on 23 October 1956 by the Conference on the Statute of the IAEA held at United Nations Headquarters, New York; it entered into force on 29 July 1957. The Headquarters of the Agency are situated in Vienna. Its principal objective is "to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world".

IAEA SAFETY STANDARDS SERIES No. GSG-14

ARRANGEMENTS FOR PUBLIC COMMUNICATION IN PREPAREDNESS AND RESPONSE FOR A NUCLEAR OR RADIOLOGICAL EMERGENCY

GENERAL SAFETY GUIDE

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FOREWORD

The IAEA's Statute authorizes the Agency to "establish or adopt… standards of safety for protection of health and minimization of danger to life and property" — standards that the IAEA must use in its own operations, and which States can apply by means of their regulatory provisions for nuclear and radiation safety. The IAEA does this in consultation with the competent organs of the United Nations and with the specialized agencies concerned. A comprehensive set of high quality standards under regular review is a key element of a stable and sustainable global safety regime, as is the IAEA's assistance in their application.

The IAEA commenced its safety standards programme in 1958. The emphasis placed on quality, fitness for purpose and continuous improvement has led to the widespread use of the IAEA standards throughout the world. The Safety Standards Series now includes unified Fundamental Safety Principles, which represent an international consensus on what must constitute a high level of protection and safety. With the strong support of the Commission on Safety Standards, the IAEA is working to promote the global acceptance and use of its standards.

Standards are only effective if they are properly applied in practice. The IAEA's safety services encompass design, siting and engineering safety, operational safety, radiation safety, safe transport of radioactive material and safe management of radioactive waste, as well as governmental organization, regulatory matters and safety culture in organizations. These safety services assist Member States in the application of the standards and enable valuable experience and insights to be shared.

Regulating safety is a national responsibility, and many States have decided to adopt the IAEA's standards for use in their national regulations. For parties to the various international safety conventions, IAEA standards provide a consistent, reliable means of ensuring the effective fulfilment of obligations under the conventions. The standards are also applied by regulatory bodies and operators around the world to enhance safety in nuclear power generation and in nuclear applications in medicine, industry, agriculture and research.

Safety is not an end in itself but a prerequisite for the purpose of the protection of people in all States and of the environment — now and in the future. The risks associated with ionizing radiation must be assessed and controlled without unduly limiting the contribution of nuclear energy to equitable and sustainable development. Governments, regulatory bodies and operators everywhere must ensure that nuclear material and radiation sources are used beneficially, safely and ethically. The IAEA safety standards are designed to facilitate this, and I encourage all Member States to make use of them.

PREFACE

In March 2015, the IAEA's Board of Governors approved a Safety Requirements publication, IAEA Safety Standards Series No. GSR Part 7, Preparedness and Response for a Nuclear or Radiological Emergency, which was jointly sponsored by 13 international organizations. GSR Part 7 establishes requirements for an adequate level of preparedness for and response to a nuclear or radiological emergency, irrespective of the initiating cause of the emergency. The IAEA General Conference, in resolution GC(60)/RES/9, encouraged Member States "to consider the recently published IAEA Safety Standards Series No. GSR Part 7 on Preparedness and Response for a Nuclear or Radiological Emergency in the context of their nuclear or radiological emergency arrangements".

This Safety Guide is intended to assist Member States in establishing the arrangements for public communication foreseen in GSR Part 7. This Safety Guide provides guidance and recommendations on the arrangements to provide the public with useful, timely, true, clear and appropriate information, to warn them promptly and to instruct them on actions to be taken.

At the International Symposium on Communicating Nuclear and Radiological Emergencies, which took place in October 2018, the importance of establishing principles and practical arrangements for emergency public communication was acknowledged and the necessity of having best practices reflected in the international safety standards was highlighted. Member States were encouraged "to utilize [this] Safety Guide…for further strengthening their preparedness for emergency communication and to provide feedback to the IAEA on its use."

The Food and Agriculture Organization of the United Nations (FAO), the IAEA, the International Civil Aviation Organization (ICAO), INTERPOL, the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) and the United Nations Office for Outer Space Affairs (UNOOSA) are joint sponsors of this Safety Guide.

THE IAEA SAFETY STANDARDS

BACKGROUND

Radioactivity is a natural phenomenon and natural sources of radiation are features of the environment. Radiation and radioactive substances have many beneficial applications, ranging from power generation to uses in medicine, industry and agriculture. The radiation risks to workers and the public and to the environment that may arise from these applications have to be assessed and, if necessary, controlled.

Activities such as the medical uses of radiation, the operation of nuclear installations, the production, transport and use of radioactive material, and the management of radioactive waste must therefore be subject to standards of safety.

Regulating safety is a national responsibility. However, radiation risks may transcend national borders, and international cooperation serves to promote and enhance safety globally by exchanging experience and by improving capabilities to control hazards, to prevent accidents, to respond to emergencies and to mitigate any harmful consequences.

States have an obligation of diligence and duty of care, and are expected to fulfil their national and international undertakings and obligations.

International safety standards provide support for States in meeting their obligations under general principles of international law, such as those relating to environmental protection. International safety standards also promote and assure confidence in safety and facilitate international commerce and trade.

A global nuclear safety regime is in place and is being continuously improved. IAEA safety standards, which support the implementation of binding international instruments and national safety infrastructures, are a cornerstone of this global regime. The IAEA safety standards constitute a useful tool for contracting parties to assess their performance under these international conventions.

THE IAEA SAFETY STANDARDS

The status of the IAEA safety standards derives from the IAEA's Statute, which authorizes the IAEA to establish or adopt, in consultation and, where appropriate, in collaboration with the competent organs of the United Nations and with the specialized agencies concerned, standards of safety for protection of health and minimization of danger to life and property, and to provide for their application.

With a view to ensuring the protection of people and the environment from harmful effects of ionizing radiation, the IAEA safety standards establish fundamental safety principles, requirements and measures to control the radiation exposure of people and the release of radioactive material to the environment, to restrict the likelihood of events that might lead to a loss of control over a nuclear reactor core, nuclear chain reaction, radioactive source or any other source of radiation, and to mitigate the consequences of such events if they were to occur. The standards apply to facilities and activities that give rise to radiation risks, including nuclear installations, the use of radiation and radioactive sources, the transport of radioactive material and the management of radioactive waste.

Safety measures and security measures[1] have in common the aim of protecting human life and health and the environment. Safety measures and security measures must be designed and implemented in an integrated manner so that security measures do not compromise safety and safety measures do not compromise security.

The IAEA safety standards reflect an international consensus on what constitutes a high level of safety for protecting people and the environment from harmful effects of ionizing radiation. They are issued in the IAEA Safety Standards Series, which has three categories (see Fig. 1).

Safety Fundamentals

Safety Fundamentals present the fundamental safety objective and principles of protection and safety, and provide the basis for the safety requirements.

Safety Requirements

An integrated and consistent set of Safety Requirements establishes the requirements that must be met to ensure the protection of people and the environment, both now and in the future. The requirements are governed by the objective and principles of the Safety Fundamentals. If the requirements are not met, measures must be taken to reach or restore the required level of safety. The format and style of the requirements facilitate their use for the establishment, in a harmonized manner, of a national regulatory framework. Requirements, including numbered ‘overarching’ requirements, are expressed as ‘shall’ statements. Many requirements are not addressed to a specific party, the implication being that the appropriate parties are responsible for fulfilling them.

Safety Guides

Safety Guides provide recommendations and guidance on how to comply with the safety requirements, indicating an international consensus that it

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[1] See also publications issued in the IAEA Nuclear Security Series.

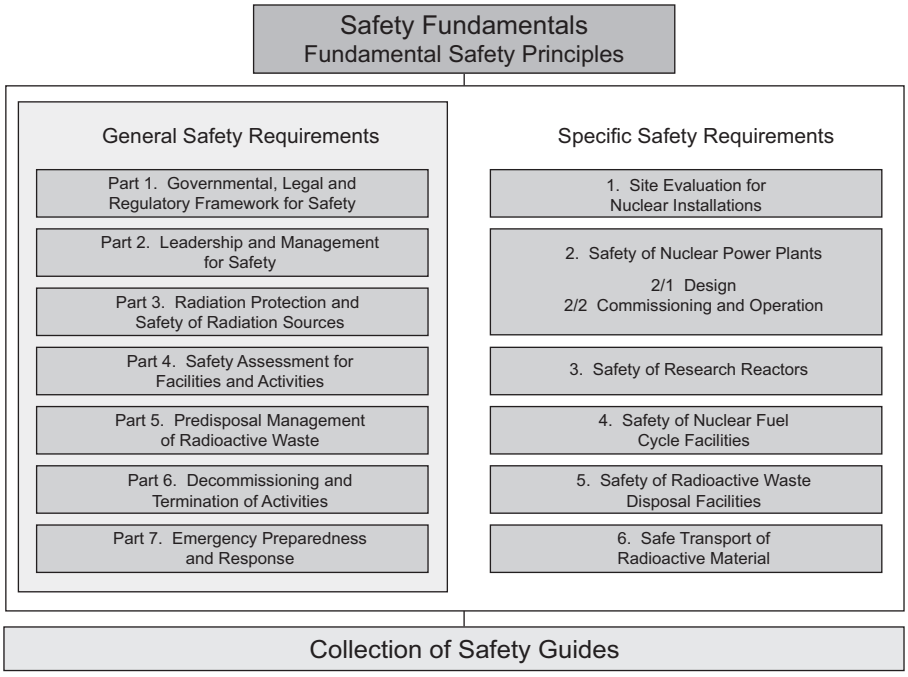

FIG. 1. The long term structure of the IAEA Safety Standards Series.

is necessary to take the measures recommended (or equivalent alternative measures). The Safety Guides present international good practices, and increasingly they reflect best practices, to help users striving to achieve high levels of safety. The recommendations provided in Safety Guides are expressed as 'should' statements.

APPLICATION OF THE IAEA SAFETY STANDARDS

The principal users of safety standards in IAEA Member States are regulatory bodies and other relevant national authorities. The IAEA safety standards are also used by co-sponsoring organizations and by many organizations that design, construct and operate nuclear facilities, as well as organizations involved in the use of radiation and radioactive sources.

The IAEA safety standards are applicable, as relevant, throughout the entire lifetime of all facilities and activities — existing and new — utilized for peaceful purposes and to protective actions to reduce existing radiation risks. They can be

used by States as a reference for their national regulations in respect of facilities and activities.

The IAEA's Statute makes the safety standards binding on the IAEA in relation to its own operations and also on States in relation to IAEA assisted operations.

The IAEA safety standards also form the basis for the IAEA's safety review services, and they are used by the IAEA in support of competence building, including the development of educational curricula and training courses.

International conventions contain requirements similar to those in the IAEA safety standards and make them binding on contracting parties. The IAEA safety standards, supplemented by international conventions, industry standards and detailed national requirements, establish a consistent basis for protecting people and the environment. There will also be some special aspects of safety that need to be assessed at the national level. For example, many of the IAEA safety standards, in particular those addressing aspects of safety in planning or design, are intended to apply primarily to new facilities and activities. The requirements established in the IAEA safety standards might not be fully met at some existing facilities that were built to earlier standards. The way in which IAEA safety standards are to be applied to such facilities is a decision for individual States.

The scientific considerations underlying the IAEA safety standards provide an objective basis for decisions concerning safety; however, decision makers must also make informed judgements and must determine how best to balance the benefits of an action or an activity against the associated radiation risks and any other detrimental impacts to which it gives rise.

DEVELOPMENT PROCESS FOR THE IAEA SAFETY STANDARDS

The preparation and review of the safety standards involves the IAEA Secretariat and five safety standards committees, for emergency preparedness and response (EPReSC) (as of 2016), nuclear safety (NUSSC), radiation safety (RASSC), the safety of radioactive waste (WASSC) and the safe transport of radioactive material (TRANSSC), and a Commission on Safety Standards (CSS) which oversees the IAEA safety standards programme (see Fig. 2).

All IAEA Member States may nominate experts for the safety standards committees and may provide comments on draft standards. The membership of the Commission on Safety Standards is appointed by the Director General and includes senior governmental officials having responsibility for establishing national standards.

A management system has been established for the processes of planning, developing, reviewing, revising and establishing the IAEA safety standards.

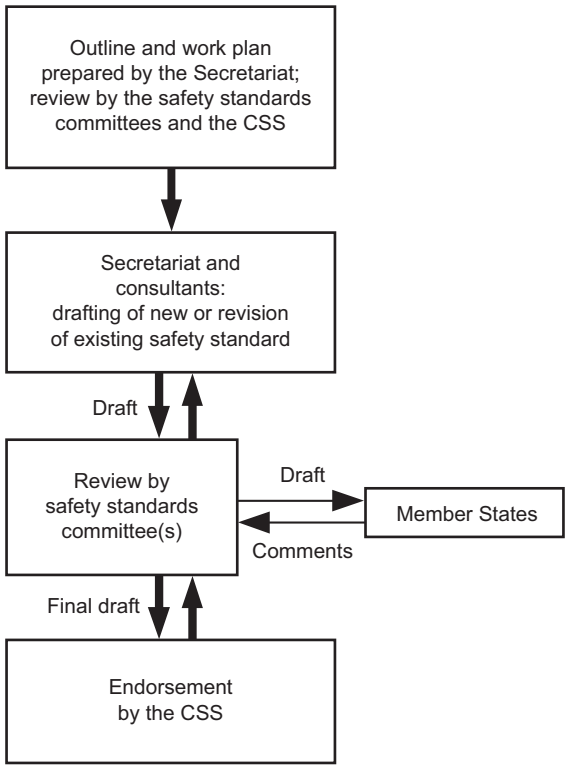

FIG. 2. The process for developing a new safety standard or revising an existing standard.

It articulates the mandate of the IAEA, the vision for the future application of the safety standards, policies and strategies, and corresponding functions and responsibilities.

INTERACTION WITH OTHER INTERNATIONAL ORGANIZATIONS

The findings of the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) and the recommendations of international expert bodies, notably the International Commission on Radiological Protection (ICRP), are taken into account in developing the IAEA safety standards. Some safety standards are developed in cooperation with other bodies in the United Nations system or other specialized agencies, including the Food and Agriculture Organization of the United Nations, the United Nations Environment Programme, the International Labour Organization, the OECD Nuclear Energy Agency, the Pan American Health Organization and the World Health Organization.

INTERPRETATION OF THE TEXT

Safety related terms are to be understood as defined in the IAEA Safety Glossary (see http://www-ns.iaea.org/standards/safety-glossary.htm). Otherwise, words are used with the spellings and meanings assigned to them in the latest edition of The Concise Oxford Dictionary. For Safety Guides, the English version of the text is the authoritative version.

The background and context of each standard in the IAEA Safety Standards Series and its objective, scope and structure are explained in Section 1, Introduction, of each publication.

Material for which there is no appropriate place in the body text (e.g. material that is subsidiary to or separate from the body text, is included in support of statements in the body text, or describes methods of calculation, procedures or limits and conditions) may be presented in appendices or annexes.

An appendix, if included, is considered to form an integral part of the safety standard. Material in an appendix has the same status as the body text, and the IAEA assumes authorship of it. Annexes and footnotes to the main text, if included, are used to provide practical examples or additional information or explanation. Annexes and footnotes are not integral parts of the main text. Annex material published by the IAEA is not necessarily issued under its authorship; material under other authorship may be presented in annexes to the safety standards. Extraneous material presented in annexes is excerpted and adapted as necessary to be generally useful.

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1. INTRODUCTION

BACKGROUND

1.1. Jointly sponsored by 13 international organizations, IAEA Safety Standards Series No. GSR Part 7, Preparedness and Response for a Nuclear or Radiological Emergency [1], establishes the requirements for an adequate level of preparedness and response for a nuclear or radiological emergency, irrespective of the initiator of the emergency, which could be a natural event, a human error, a mechanical or other failure, or a nuclear security event[1].

1.2. Requirement 10 of GSR Part 7 [1] states:

> "**The government shall ensure that arrangements are in place to provide the public who are affected or are potentially affected by a nuclear or radiological emergency with information that is necessary for their protection, to warn them promptly and to instruct them on actions to be taken.**"

1.3. IAEA Safety Standards Series No. GSR Part 3, Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards [2], establishes requirements for the protection of people and the environment from harmful effects of ionizing radiation in all situations of exposure, including in emergency exposure situations. Requirement 43 of GSR Part 3 [2] requires the establishment of an emergency management system. Furthermore, para. 4.5(e) of GSR Part 3 [2] states:

> "The emergency management system shall provide for essential elements at the scene, and at the local, national and international level, as appropriate, including…:
>
> (e) Reliable communication, including public information".

[1] A 'nuclear security event' is an event that has potential or actual implications for nuclear security that must be addressed. Such events include criminal or intentional unauthorized acts involving or directed at nuclear material, other radioactive material, associated facilities or associated activities. A nuclear security event, for example sabotage of a nuclear facility or detonation of a radiological dispersal device, may give rise to a nuclear or radiological emergency.

1.4. Requirement 13 of GSR Part 7 [1] states:

> "**The government shall ensure that arrangements are in place for communication with the public throughout a nuclear or radiological emergency.**"

1.5. Public communication is essential to the effectiveness of protective actions to mitigate adverse consequences of an emergency for human life, health, property and the environment. Effective communication with the public that is timely, clear and accurate is also important for maintaining trust on the part of the public (hereafter referred to as 'public trust'). Experience has demonstrated the importance of, and the challenges involved in, communicating with the public in a nuclear or radiological emergency. Past emergencies have had local, national, regional and international consequences and have led to high levels of public awareness and concern. This has led to greater emphasis being placed on effective public communication in preparedness and response for a nuclear or radiological emergency.

1.6. Effective public communication is dependent on the level of emergency preparedness of the States and organizations involved. Emergency preparedness includes developing a public communication programme, including a strategy and plans for being adequately prepared for public communication in a nuclear or radiological emergency.

1.7. In meeting Requirements 10 and 13 of GSR Part 7 [1], States will contribute to fulfilling, in part, Requirement 16 of GSR Part 7 [1], which states:

> "**The government shall ensure that arrangements are in place for mitigation of non-radiological consequences of a nuclear or radiological emergency and of an emergency response.**"

Such non-radiological consequences could include, for example, anxiety and long term psychological effects among the public. These non-radiological consequences could be mitigated by means of effective public communication on radiological health hazards and clear instructions on any protective actions to be taken.

OBJECTIVE

1.8. The objective of this Safety Guide is to provide recommendations on meeting requirements relating to arrangements for public communication in preparedness and response for a nuclear or radiological emergency. The main requirements are Requirements 10, 13 and 16 of GSR Part 7 [1]. Requirement 43 of GSR Part 3 [2] on the emergency management system is also relevant.

1.9. This Safety Guide provides recommendations to States on arrangements to be made at the preparedness stage for communication with the public and the news media for the purpose of mitigating adverse consequences of a nuclear or radiological emergency for human life, health, property and the environment. It provides recommendations and guidance for ensuring that due attention is paid to public communication in preparedness and response for an emergency and for supporting decisions made on protective actions. This Safety Guide also provides recommendations on activating these arrangements in an emergency response. It further provides recommendations on the coordination of response organizations and other authorities providing official information in preparedness and response for a nuclear or radiological emergency.

1.10. The recommendations provided in this Safety Guide are also intended to help to reduce anxiety among the public and to reduce the likelihood of actions being taken by the public that have not been recommended by an authority.

1.11. This Safety Guide provides specific recommendations on:

(a) A public communication programme for transparent (i.e. frank and open), timely, clear and accurate (i.e. factually correct) communication with the public;
(b) Coordination, to the extent practicable, of response organizations and other authorities providing official information;
(c) Effective messaging and consistent messages.

1.12. The recommendations provided in this Safety Guide are specifically aimed at organizations with roles and responsibilities in preparedness and response for a nuclear or radiological emergency. The principal users of this Safety Guide are those with responsibilities for communication with the public and the news media in an emergency, including those who do not have day to day public communication tasks.

1.13. This Safety Guide also provides recommendations on roles and responsibilities in relation to public communication for those who may not have a designated function in public communication but may be involved in the communication response.

1.14. This Safety Guide is to be used in conjunction with GSR Part 7 [1], with due account taken, as appropriate, of the recommendations and guidance provided in IAEA Safety Standards Series Nos:

(a) GS-G-2.1, Arrangements for Preparedness for a Nuclear or Radiological Emergency [3];
(b) GSG-2, Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency [4];
(c) GSG-11, Arrangements for the Termination of a Nuclear or Radiological Emergency [5];
(d) GSG-6, Communication and Consultation with Interested Parties by the Regulatory Body [6].

SCOPE

1.15. The recommendations provided in this Safety Guide are applicable for a nuclear or radiological emergency, irrespective of the initiator of the emergency, including emergencies due to a perceived hazard.[2]

1.16. This Safety Guide is applicable for all facilities and activities[3] — used or undertaken for peaceful purposes — with the potential to cause radiation exposure,

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[2] 'Emergency' is defined as a non-routine situation or event that necessitates prompt action, primarily to mitigate a hazard or adverse consequences for human life, health, property and the environment [7]. 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. A 'nuclear or radiological emergency' is defined as an emergency in which there is, or is perceived to be, a hazard due to: (i) the energy resulting from a nuclear chain reaction or from the decay of the products of a chain reaction; or (ii) radiation exposure. Notwithstanding the definitions of these terms, for reasons of brevity, in this Safety Guide the term 'emergency' is intended to mean a nuclear or radiological emergency, unless otherwise specified.

[3] 'Facilities and activities' is a general term encompassing nuclear facilities, uses of all sources of ionizing radiation, all radioactive waste management activities, transport of radioactive material and any other practice or circumstances in which people may be subject to exposure to radiation from naturally occurring or artificial sources [7].

environmental contamination or public concern warranting protective actions or other response actions.[4]

1.17. The recommendations provided in this Safety Guide cover the range of possible nuclear and radiological emergencies: this necessitates the use of a graded approach[5]. Recommendations are provided on the use of a graded approach for arrangements for public communication in preparedness and response for a nuclear or radiological emergency.

1.18. This Safety Guide is also applicable for a nuclear or radiological emergency about which there is heightened public concern or media attention deriving from misconceptions, rumours, incorrect or (inadvertently or intentionally) misleading information (i.e. misinformation), or speculation that might be circulating, irrespective of any radiological hazard.

1.19. Terms are used in this Safety Guide as defined in the IAEA Safety Glossary [7]. The term 'public communication' in the context of this Safety Guide refers primarily to the dissemination of officially approved and issued information (i.e. official information) in relation to a nuclear or radiological emergency to:

(a) The population affected by or potentially affected by the emergency;
(b) The public and the news media (i.e. public information);
(c) Other interested parties.

1.20. To ensure optimal implementation, communicators will need to take into account the demographic, economic, political and social factors that characterize the communications setting in which the recommendations in this Safety Guide

[4] The 'emergency response phase' is defined as the period of time from the detection of conditions warranting an emergency response until the completion of all the emergency response actions taken in anticipation of or in response to the radiological conditions expected in the first few months of the emergency [7]. The emergency response phase typically ends when the situation is under control, the off-site radiological conditions have been characterized sufficiently well to identify whether and where food restrictions and temporary relocation are required, and all required food restrictions and temporary relocations have been put into effect (para. 2.9 of GSG-11 [5]).

[5] A graded approach is defined as: (i) For a system of control, such as a regulatory system or a safety system, a process or method in which the stringency of the control measures and conditions to be applied is commensurate, to the extent practicable, with the likelihood and possible consequences of, and the level of risk associated with, a loss of control. (ii) An application of safety requirements that is commensurate with the characteristics of the facilities and activities or the source and with the magnitude and likelihood of the exposures [7].

are to be implemented. The recommendations on public communication provided in this Safety Guide are not applicable to the following:

(a) Communication with and consultation of interested parties in relation to the planning of new nuclear facilities or other facilities or activities, or in relation to existing facilities. This includes: public information in visitor centres; communication and informational materials unrelated to nuclear safety and nuclear security, such as materials on nuclear energy or nuclear applications; and public campaigns in relation to the nuclear industry, all of which are outside the scope of this Safety Guide.
(b) Arrangements for communication after the termination of a nuclear or radiological emergency.

1.21. The recommendations provided in this Safety Guide will also support, within the context of emergency preparedness, the planning for public communication during the recovery phase, following the termination of a nuclear or radiological emergency.

STRUCTURE

1.22. Section 2 provides recommendations on considerations in public communication in preparedness and response for a nuclear or radiological emergency, and its objectives, principles and challenges. Section 3 provides recommendations on arrangements for public communication in emergency preparedness, including a programme, strategy and plan for preparedness for communication in a nuclear or radiological emergency. Additional recommendations are provided on infrastructure, resources, budgeting, tools, training and exercises. Section 3 also provides recommendations on putting radiological health hazards in perspective.

1.23. Section 4 provides recommendations on arrangements for public communication in emergency response, with emphasis on activating a public communication response and coordinating different activities, roles and responsibilities. Responding to misinformation and rumours is covered in Section 4. Section 5 provides recommendations for public communication under particular circumstances, such as nuclear or radiological emergencies initiated by an accident, a natural event or a nuclear security event, and the transition phase before the termination of an emergency.

1.24. The Appendix provides an example system for putting radiological health hazards in perspective, in support of Section 3. Annexes I–IV provide supporting information on public communication, including examples and templates to facilitate the choice of communication tools and the preparation of public information. Annex V provides information on the attribution of health effects to radiation exposure and the prospective inference of risks of radiation induced health effects.

2. CONSIDERATIONS IN PUBLIC COMMUNICATION

OBJECTIVES OF PUBLIC COMMUNICATION

2.1. The primary purpose of public communication in emergency preparedness and response should be to help to achieve the goals listed in para. 3.2 of GSR Part 7 [1], in particular, keeping the public informed and maintaining public trust. Public communication should also help to achieve the goals of mitigating adverse consequences of an emergency for human life, health, property and the environment, and of preparing, to the extent practicable, for the resumption of normal social and economic activity.

2.2. To help to achieve the goals of emergency response, the key objectives of public communication for a nuclear or radiological emergency should be:

(a) To protect the public;
(b) To inform the public, both at the preparedness stage and during the response, of protective actions and other response actions, and of the nature of any hazards, and to facilitate emergency response actions;
(c) To gain and maintain public trust in the emergency response by means of transparent, timely, clear and accurate public communication;
(d) To address public concerns with regard to potential adverse consequences for human life, health, property and the environment;
(e) To prevent undue concern, to mitigate anxiety and long term psychological effects, and to help to ensure that actions taken do more good than harm;
(f) To respond to misinformation and rumours;

(g) To enable interested parties[6] (see paras 3.122–3.128) to make informed decisions.

ESSENTIAL CHARACTERISTICS OF PUBLIC COMMUNICATION

2.3. To be effective, the public communication programme for a nuclear or radiological emergency should ensure that public communication is transparent, timely, clear and accurate, to the extent possible. Public communication should be in plain language for a general audience. These aims might be conflicting, and professional judgement should be made about the best balance (see para. 2.57).

2.4. Public communication should be coordinated between response organizations and other authorities providing official information and should comply with national requirements on the protection of sensitive information.

Openness in communication

2.5. Public communication in a nuclear or radiological emergency should be as transparent as possible. This means that the organizations concerned should be as frank, open and straightforward as possible and should not intentionally misinform or mislead the public. As well as frankness and openness, their public communication should demonstrate integrity and accountability.

2.6. There should be a long term programme of activities in relation to public communication that contribute to gaining and maintaining public trust. Gaining public trust will increase the likelihood that the public will accept and comply with protective actions and other response actions in an emergency.

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[6] 'Interested party' is a person, company, etc., with a concern or interest in the activities and performance of an organization, business, system, etc. [7]. The term interested party is used in a broad sense to mean a person or group having an interest in the performance of an organization. Those who can influence events may effectively become interested parties — whether their 'interest' is regarded as 'genuine' or not — in the sense that their views need to be considered. Interested parties have typically included the following: customers, owners, operators, employees, suppliers, partners and trade unions; the regulated industry or professionals; scientific bodies; governmental agencies or regulatory bodies (national, regional, local) whose responsibilities may cover nuclear energy; the news media; the public (individuals, community groups, interest groups); and other States, especially neighbouring States that have entered into agreements providing for an exchange of information concerning possible transboundary impacts, or States involved in the export or import of certain technologies or materials.

2.7. Organizations should also be frank and open if information cannot be released. Information might have to be withheld: for example, for reasons of nuclear security, for legal reasons or because it is unverified. Organizations should openly inform the public about which type of information is being withheld and provide the reason for withholding it.

2.8. To promote openness in communication, States should encourage public communication even when information is incomplete. Public trust should be gained and maintained by communicating what is known, by explaining what is unknown and by stating the steps being taken to find out more. The trustworthiness of organizations should be maintained even when the information that they can provide is incomplete.

2.9. To maintain the trust of the public and other interested parties, organizations should also be frank and open by publicly rectifying previously published information containing errors made by the organization.

Timeliness of information

2.10. Delays in public communication in an emergency are a cause of anxiety and speculation among the public. A lack of communication undermines public confidence and aids the spread of misinformation and rumours. Information should be provided in a timely manner to help in gaining public confidence in the emergency response.

2.11. Those responsible for public communication should weigh different concerns, expectations and perspectives of interested parties and should seek to take them into account and to communicate to the public in an effective and timely manner, especially during an emergency.

2.12. Organizations should make every effort to communicate regularly and in a timely manner, while ensuring that their communications are clear and accurate. There is often a delay in the flow of information from a facility, from an affected area or from the response organizations or other authorities in an emergency. The public and the news media may be faster in providing information at the start of an emergency, especially on web sites and on social media, which have the capacity for immediate dissemination of information.

2.13. A target time for an initial communication to the public during an emergency response should be specified at the preparedness stage by the emergency response planners in coordination with the lead public information officer[7].

2.14. An initial message should be communicated, ideally no later than one hour after the activation of the emergency response. This message should be facilitated by means of an initial statement[8] prepared at the preparedness stage (see paras 3.134 and 3.135 and Annex I).

Factual content

2.15. Response organizations and other authorities providing official information in an emergency should provide information to the public with the objectives of helping to ensure that protective actions are correctly followed and to gain and maintain public trust.

2.16. Those responsible for public communication in an emergency should ensure that information provided to the public is accurate (i.e. factually correct) and is based on verified information. Those responsible for public communication should ensure that public information does not include speculation and should not make unwarranted assurances. As stated in para. 2.8, States should encourage public communication, as appropriate, even when information is incomplete.

2.17. Information provided to the public should put protection of human life, health, property and the environment first. These objectives should not be influenced by financial, commercial or political considerations.

2.18. Information provided to the public should be factual and accurate and should not be withheld out of concern for the reputation of the organization issuing the information. This helps to demonstrate impartiality and will help in gaining and maintaining public trust.

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[7] The term 'public information officer' is used in this Safety Guide to denote a staff member of an organization whose primary responsibility is to provide information to and to communicate with the public and the news media. The 'lead public information officer' is the public information officer within the unified command and control system who leads the public communication response. Although lead public information officer is used here, the public communication response might not warrant the establishment of a public information section.

[8] An 'initial statement' is used in this Safety Guide to denote an official statement by an entity to inform the public and the news media of the occurrence of an event and the key points, and to state that the entity is actively responding to the event. An initial statement may be delivered in writing or orally.

Clarity of language

2.19. One function of public communication in a nuclear or radiological emergency is to convey technical information in suitable language for a general audience. Such information should be clear and comprehensible (i.e. in 'plain language'). Essential information might otherwise not be understood, committed to memory or recalled, especially during an emergency (i.e. in which it has been shown that stress and anxiety can affect comprehension).

2.20. The language to be used in public information should be given careful consideration to ensure, for example, that it is comprehensible to people of different generations and in different population groups, such as people with special needs, as well as to population groups that do not share the same native language as the majority of the population.

2.21. In a nuclear or radiological emergency, priority should be given to providing information on protective actions for the public. Information on protective actions should include similar concepts and terms to those used in the information provided to targeted groups at the preparedness stage. Any such usage should be supported, as necessary and to the extent possible, by clear and comprehensible definitions and explanations in plain language and should put the radiological health hazard in perspective.

USE OF SCIENTIFIC AND TECHNICAL TERMS

2.22. The use of scientific and technical terms, and of scientific quantities and units and numerical data, should be kept to an essential minimum. Any such usage should be supported, as necessary, by plain language definitions and explanations that put the radiological health hazard in perspective.

2.23. If the use of numerical data and scientific quantities and units is necessary — for example to explain limits and regulations established in national legislation — the organizations concerned should use the International System of Units (SI units), as appropriate. The use of differing quantities and units with different orders of magnitude could cause confusion and should be avoided as far as possible.

2.24. Experts in radiation protection use various special terms, quantities and units in describing radiation and its effects. These include: activity, with units of becquerel (Bq) (or curie, Ci); and various dosimetric quantities, both physical

quantities, with units of gray (Gy) (or rad), and protection quantities, with units of sievert (Sv) (or rem). The units used for such quantities often have prefixes to indicate the order of magnitude. Units, prefixes and associated terms should be used consistently to minimize confusion and to aid comprehension. For example, if 'milli-' (m) is to be used, then that prefix and the associated units should be used consistently in all communication.

2.25. Radiation quantities and units are not commonly understood by or used by the public, and they do not convey to the public a sense of what is hazardous and what is not. As monitoring data and sampling data become available, measurement results and their units should be put in perspective (see paras 2.28–2.30).

Use of tables, schematics, maps, graphs and other forms of graphics

2.26. Tables, schematics, maps, graphs and other forms of graphics are effective ways of conveying information and should be used appropriately to provide information to the public in a comprehensible form. Such material should be developed with technical experts in the subject matter and with professionals in communication.

2.27. At the preparedness stage, material should be developed to the extent possible, and should be tested with selected audiences for its usefulness (see also paras 3.151–3.154 and 4.69–4.71 on background informational material). Testing the usefulness of information that is intended to put radiological health hazards in perspective before such information is released should also be considered.

Use of comparisons

2.28. Comparisons that are intended to put radiological health hazards and radiation exposure in perspective should be as clear and comprehensible as possible, consistent with being accurate and not misleading. Comparisons should be appropriate to the national context and the social context, and they should be relevant to the audience to ensure that such comparisons increase understanding and do not cause confusion.

2.29. Comparisons that use published reference material should refer to material that can be validated and that audiences can access and understand for themselves. Those responsible for public communication in an emergency should be aware that comparisons of radiation risks with voluntary risks and with non-radiation-related risks are contentious and should be avoided.

2.30. Experience from past emergencies indicates that those responsible for public communication in an emergency should consider comparing radiation levels with natural background levels of radiation, or with radiation levels used in medical exposure or in other applications of radiation, to help to relieve anxiety among the public [8].

COORDINATION OF PUBLIC COMMUNICATION

2.31. Requirement 2 of GSR Part 7 [1] states:

> "**The government shall make provisions to ensure that roles and responsibilities for preparedness and response for a nuclear or radiological emergency are clearly specified and clearly assigned.**"

2.32. Paragraph 4.10 of GSR Part 7 [1] states:

> "The government shall establish a national coordinating mechanism[5] to be functional at the preparedness stage, consistent with its emergency management system…
>
> "[5] The mechanism for ensuring coordination may differ for different tasks. It may involve an existing body or a newly established body (e.g. a committee consisting of representatives from different organizations and bodies) that has been given the authority to ensure the necessary coordination."

2.33. Paragraph 4.10(i) of GSR Part 7 [1] states that one of the functions of this national coordinating mechanism is "To coordinate effective communication with the public in preparedness for a nuclear or radiological emergency."

2.34. Paragraph 5.70 of GSR Part 7 [1] states:

> "Arrangements shall be made to ensure that information provided to the public by response organizations, operating organizations, the regulatory body, international organizations and others in a nuclear or radiological emergency is coordinated and consistent, with due recognition of the evolutionary nature of an emergency."

Organizations responsible for public communication in an emergency should coordinate their public communication with the aim of avoiding conflicting messages and of ensuring consistency in messaging to prevent confusion.

The same message should be heard from various trusted sources in a ‘one message, many voices’ approach to gain and maintain public trust in the emergency response.

2.35. Organizations responsible for public communication should communicate information to the public that corresponds to each organization’s areas of responsibility and authority (e.g. public health, protection of the environment, law enforcement).

2.36. In exceptional circumstances, it may be appropriate for an organization to communicate information that is not within its area of responsibility (e.g. if an organization, although not having the authority of jurisdiction, is most capable of rapidly communicating information for the protection of the public). In such cases, mechanisms should be put in place to ensure consistency of messaging between the organization communicating information and the organization having that area of responsibility and authority of jurisdiction.

2.37. In general, the primary provider of public information in a nuclear or radiological emergency should be the designated lead public information officer within an established unified command and control system (see paras 3.31–3.47). This position may be supported by other organizations in accordance with their mandates.

2.38. Procedures should be drafted, agreed upon and exercised among organizations responsible for public communication at the preparedness stage. This should include procedures for sharing information among public information officers in an emergency.

CHALLENGES OF PUBLIC COMMUNICATION

Perception of risk

2.39. The public perception of risk may be different from the assessments of risk[9] provided by experts in radiation protection; this has implications for public communication during a nuclear or radiological emergency. Risk perception can be influenced by various factors, including knowledge, individual beliefs, values and norms, as well as wider societal and national aspects.

2.40. Experts in radiation protection define risk in terms of cause and effect relationships and attempt to quantify the likelihood that harm might result from radiation exposure. Members of the public take more account of qualitative factors in deciding whether they consider an involuntary risk to be acceptable. Those responsible for public communication should be aware that this tendency could mean that risks with a low estimated likelihood are perceived by the public to be high risks. Guidance on qualitative factors that influence perceptions of risk are provided in Ref. [9].

2.41. To address the tendency for risks of low estimated likelihood being perceived as high risks, a process that includes regular information activities and/or regular communication with and consultation of the public should be put in place at the preparedness stage. This process should be coordinated with routine activities for communication with and consultation of other interested parties.

Misinformation and rumours

2.42. Paragraph 5.74 of GSR Part 7 [1] states:

> "Arrangements shall be made to identify and address, to the extent practicable, misconceptions, rumours and incorrect and misleading information that might be circulating widely in a nuclear or radiological

[9] 'Risk' in this context means the estimated probability that a specified health effect will occur in a person or group as a result of exposure to radiation [7]. The health effect(s) in question need to be stated, for example risk of fatal cancer, risk of serious hereditary effects or overall radiation detriment. Risk is commonly expressed as the product of the estimated probability that exposure will occur and the estimated probability that the exposure, assuming that it occurs, will cause the specified health effect(s). The latter probability is sometimes termed the 'conditional risk'. Risks can be estimated by using evidence from epidemiological investigations of disease rates in previously exposed populations (i.e. based on past observations).

emergency, in particular those that might result in actions being taken beyond those emergency response actions that are warranted[34]....

"[34]Actions beyond those emergency response actions that are warranted include, but are not limited to: actions that interfere with prompt implementation of protective actions, such as self-evacuation both from within and from outside areas from which evacuation is ordered; actions that unnecessarily burden the health care system; actions that shun or otherwise discriminate against people or products from an area affected by a nuclear or radiological emergency; elective terminations of pregnancy that are not radiologically informed; and cancellations of commercial flights that are not radiologically informed."

2.43. The increased anxiety felt during and in the aftermath of an accident is intensified by misinformation and rumours, which present an additional health hazard. Paragraph 5.92 of GSR Part 7 [1] relates to mitigating such non-radiological consequences and states:

"Arrangements shall be put in place for any actions taken, beyond those emergency response actions that are warranted, by members of the public and by commercial, industrial, infrastructural or other governmental or non-governmental bodies to be, to the extent practicable, promptly identified and appropriately addressed. This shall include the designation of organization(s) with the responsibility for monitoring for, identifying and addressing such actions."

2.44. Rumours will arise from various sources during an emergency response. Social media, which enable immediate dissemination of information — including misinformation, rumours and speculation — have made responding to misinformation and rumours in an emergency a bigger challenge. A discussion on responding to rumours during an emergency response is provided in Ref. [9].

2.45. Arrangements for responding to misinformation and rumours should be put in place to ensure that they do not lead to actions being taken by the public on the basis of incorrect or misleading information. Such actions could go beyond those emergency response actions that are warranted and could do more harm than good.

2.46. The arrangements for responding to misinformation and rumours should enable the identification of misinformation and rumours through media monitoring (see paras 3.107–3.110) and the correction of incorrect and misleading information by means of public communication tools (see paras 3.129–3.163).

Maintaining public trust

2.47. It should be expected that the level of public trust will influence how willing the public will be to comply with instructions on protective actions and other response actions. Equally, it should be expected that a loss of public trust will increase the likelihood that people will take unwarranted actions during an emergency.

2.48. All reasonable efforts should be made to gain and maintain public trust in the emergency response. These efforts should commence at the preparedness stage. Gaining public trust takes time and may necessitate continuing public communication efforts.

2.49. Gaining and maintaining public trust should remain an objective at all times: if public trust is lost, it is unlikely to be restored during an emergency.

2.50. Public communication should have the essential features described in paras 2.3–2.21 to help to maintain public trust during a nuclear or radiological emergency. Experience shows that public trust in the emergency response, and in the response organizations and other authorities providing official information, could otherwise be undermined.

2.51. Whom the public decide to trust is not uniform. It should be expected that different people will place their trust in different authorities, organizations or individuals. Information on the importance of trust in public communication is provided in Ref. [9].

2.52. Paragraph 5.45 of GSR Part 7 [1] states:

> "For facilities in [emergency preparedness] category I or II and areas in [emergency preparedness] category V[10], arrangements shall be made to provide the permanent population, transient population groups and special population groups or those responsible for them and special facilities within the emergency planning zones and emergency planning distances (see para. 5.38 [of GSR Part 7 [1]]), before operation and throughout the lifetime

[10] In GSR Part 7 [1], assessed hazards are grouped in accordance with five emergency preparedness categories and establish the basis for a graded approach to the application of the requirements in GSR Part 7 [1], and for developing generically justified and optimized arrangements for preparedness and response for a nuclear or radiological emergency (see also table 1 of GSR Part 7 [1]).

of the facility, with information on the response to a nuclear or radiological emergency. This information shall include information on the potential for a nuclear or radiological emergency, on the nature of the hazards, on how people would be warned or notified, and on the actions to be taken in such an emergency. The information shall be provided in the languages mainly spoken by the population residing within the emergency planning zones and emergency planning distances. The effectiveness of these arrangements for public information shall be periodically assessed."

Timeliness and accuracy of information

2.53. The first few hours of the response to a nuclear or radiological emergency are crucial for the public communication response. The increasing use of social media, for example, increases the demand for timely public communication.

2.54. A pre-approved initial statement should be provided early in the response with the aim of quickly establishing channels for public communication and dissuading the spreading of misinformation and rumours, which could undermine trust in the emergency response.

2.55. While the public and interested parties may demand detailed information immediately, the response organizations might not have confirmed information available early in the response. Notwithstanding this, arrangements should be made to communicate promptly to the public, even before all the information has been fully confirmed. In such cases, organizations responsible for public communication should clarify which types of information are confirmed and which are unconfirmed. It should also indicate when, and the conditions under which, further information will be made available.

2.56. A pre-approved initial statement (see paras 3.134 and 3.135) should be prepared for prompt distribution in an emergency, either actively (e.g. by press release, on official web sites and on social media) or reactively (i.e. in answer to specific requests from the public, the news media or other interested parties), as necessary. An example template of such an initial statement is provided in Annex I.

2.57. The need to issue information in a timely manner should not compromise the need for accuracy. Incorrect and misleading information undermines public trust in the emergency response and jeopardizes the objectives of public communication. This might lead to actions being taken that go beyond those emergency response actions that are warranted (see paras 2.42–2.46).

2.58. Unconfirmed information or speculation should not be released to the public. However, it may be necessary to issue incomplete information, together with appropriate explanations and qualifications (see also para. 2.8).

Recognizing social context

2.59. The public communication programme should take account of the fact that the conduct of public communication and its perception by the public may differ depending on the social context, including diverse occupational, educational, economic and linguistic backgrounds, which may mean that outreach measures need to be accommodated to ensure optimal reception. For effective public communication with the public and interested parties, an understanding should be gained of differences in the social context. In organizing public communication, arrangements should be made to enable interested parties to participate as appropriate, and activities should be prepared accordingly.

Two-way communication

2.60. A nuclear or radiological emergency will necessitate two-way communication. Arrangements should be put in place for official information to be made available to the public promptly and directly. At the same time, lines of communication with response organizations and other authorities providing official information should remain open. Such organizations should be able to use the lines of communication to respond to the questions and concerns of interested parties.

2.61. Arrangements, including for resources and logistics, should be put in place for the use of various channels of communication to encourage and support two-way communication. These arrangements should help to ensure that the public has the means to communicate with response organizations and other authorities providing official information and guidance in an emergency.

2.62. Arrangements should be put in place for traditional two-way channels of communication, such as dedicated telephone enquiry lines (‘hotlines’) for the public and the news media, open public meetings and other meetings and channels of communication with interested parties.

2.63. Those responsible for public communication in an emergency should anticipate that the news media and social media (in particular the use of social media as providers of unofficial information) will generate an increasing demand for two-way communication during an emergency. This will, in turn, necessitate

increased resources to enable the prompt dissemination of information and public communication at any time, depending on the nature and severity of the emergency.

2.64. Strategies and clear guidelines should be developed and put in place on how to communicate with the public on social media, as appropriate to the national context. There should be a code of conduct in place for the private use of social media by members of response organizations. This is because messages posted in a private capacity could be mistaken for official information if they include comments on an emergency. Such codes of conduct should be drafted at the preparedness stage, and staff members should be informed of the rules for the use of social media to help them avoid pitfalls in the use of these media.

3. ARRANGEMENTS FOR PUBLIC COMMUNICATION IN EMERGENCY PREPAREDNESS

GENERAL

3.1. This section provides recommendations on the arrangements that should be put in place at the preparedness stage in order to communicate effectively with the public in the response to a nuclear or radiological emergency.

3.2. Paragraph 4.1 of GSR Part 7 [1] states:

> "The government shall ensure that an emergency management system is established and maintained on the territories of and within the jurisdiction of the State for the purposes of emergency response to protect human life, health, property and the environment in the event of a nuclear or radiological emergency."

3.3. An effective emergency management system is required to incorporate reliable public communication at all stages (para. 4.5(e) of GSR Part 3 [2]): the preparedness stage, the emergency response phase and the transition phase (see section 2 of GSG-11 [5] on the phases of an emergency). Arrangements should be put in place at the preparedness stage for public communication during the emergency response phase and during the transition phase.

PUBLIC COMMUNICATION PROGRAMME

3.4. A public communication programme is an arrangement made at the preparedness stage for organizing public communication during a nuclear or radiological emergency. It should specify the following:

(a) A public communication strategy that states the principal objectives of and approach to public communication in an emergency;
(b) A public communication plan;
(c) The necessary infrastructure and resources, based on a specified budget.

3.5. Paragraph 4.7 of GSR Part 7 [1] states:

> "The government shall ensure that all roles and responsibilities for preparedness and response for a nuclear or radiological emergency are clearly allocated in advance among operating organizations, the regulatory body and response organizations[4].
>
> "[4] This also includes the allocation of roles and responsibilities, as appropriate, among members of the government."

3.6. The public communication programme should be prepared in advance in accordance with the allocation of roles and responsibilities described in para. 3.5, and in coordination with the regulatory body and all responsible operating organizations and response organizations within a unified command and control system (see paras 3.31–3.47). The public communication programme should be evaluated and updated at regular intervals.

3.7. Any transfer of responsibilities for public communication in the transition phase should be considered at the preparedness stage and should be included in the public communication programme.

3.8. The public communication programme, including the necessary resources, should be approved by response organizations. Appropriate human resources and financial resources should be allocated on a continuing basis for the purpose of ensuring preparedness and maintaining a high level of readiness for an emergency response.

3.9. At the preparedness stage, the public communication programme should identify all practical arrangements and logistics necessary for a public communication strategy and a public communication plan. These arrangements

will support public communication during the response to a nuclear or radiological emergency.

3.10. A public communication programme should be developed in a State irrespective of whether it has a nuclear power programme: an emergency involving a radioactive source could occur in any State. Experience has demonstrated that an emergency at a facility in one State could have effects on the public in other States. Possible effects include non-radiological consequences, such as anxiety among the public, as well as economic and commercial consequences, such as disruption to shipping and commercial airline flights.

PUBLIC COMMUNICATION STRATEGY

3.11. Paragraph 5.69 of GSR Part 7 [1] states that "Communication with the public in a nuclear or radiological emergency shall be carried out on the basis of a strategy to be developed at the preparedness stage as part of the protection strategy." The public communication strategy should be developed and applied at the preparedness stage in order to identify key issues and target audiences, to prepare appropriate messages and to carry out communication activities. Guidance for developing a communication strategy is provided in Ref. [10].

3.12. The public communication strategy, and the public communication plan that is formulated from this strategy, should be based on a graded approach (see para. 1.17). The graded approach should be applied to public communication on the basis of the characteristics of the emergency, the magnitude of its actual or expected consequences and its significance for the public.

3.13. The elements of a public communication strategy should include the following:

(a) A description of all relevant scenarios for hazard assessment[11];
(b) Strategic considerations determining the main challenges for public communication for each scenario;
(c) Specific objectives for the public communication response for each scenario, with account taken of the strategic considerations in achieving the goals of

[11] 'Hazard assessment' is the assessment of hazards associated with facilities, activities or sources within or beyond the borders of a State in order to identify: (i) those events and the associated areas for which protective actions and other response actions may be required within the State; and (ii) actions that would be effective in mitigating the consequences of such events [7].

emergency response and the key objectives of public communication set out in paras 2.1 and 2.2;

(d) An identification of the key target audiences for each scenario;

(e) Key messages for each scenario that can be prepared at the preparedness stage in support of achieving the public communication objectives for the scenario;

(f) The recommended approach for the most effective performance of public communication tasks (see paras 3.98–3.121) and the use of public communication tools (see paras 3.129–3.163);

(g) Any expected transfer of responsibilities for public communication in the transition phase.

3.14. The context in which the public communication strategy is to be applied should be considered. Surveys should be made of the perception of risks and the information needs of the public, both at a national level and among the population potentially affected in areas around nuclear facilities or around facilities in which radiation sources are used. On the basis of information obtained in these surveys, a public awareness programme should be established to provide information in plain language (see paras 2.19–2.21) at the preparedness stage. The information provided should cover how the response to a nuclear or radiological emergency would be conducted and how the public would be protected.

3.15. The information should be made available to the population within the emergency planning zones and emergency planning distances (see para. 5.38 of GSR Part 7 [1]) to assist the public in making informed decisions on protective actions or other response actions in an emergency response.

3.16. Paragraph 5.69 of GSR Part 7 [1] states that "These arrangements shall take into account the need to protect sensitive information in circumstances where a nuclear or radiological emergency is initiated by a nuclear security event." Arrangements for public communication in an emergency initiated by a nuclear security event should be established at the preparedness stage (see paras 5.10–5.14).

3.17. The arrangements for public communication as outlined in the public communication strategy should be explained and described in the public communication plan (see paras 3.18–3.28).

PUBLIC COMMUNICATION PLAN

3.18. Requirement 23 of GSR Part 7 [1] states:

> "**The government shall ensure that plans and procedures necessary for effective response to a nuclear or radiological emergency are established.**"

3.19. Arrangements should be made to develop a public communication plan for a nuclear or radiological emergency on the basis of the public communication strategy. A method for developing a public communication plan for a nuclear or radiological emergency is provided in Ref. [10].

3.20. The public communication plan for an emergency should apply the public communication strategy, with account taken of emergency scenarios derived from relevant hazard assessment scenarios.

3.21. The public communication plan for an emergency should set out a clear framework and an organizational structure for public communication. The public communication plan should allocate responsibilities, goals and tasks within the organizational structure for the public communication response.

3.22. The public communication plan should provide operational guidelines for an appropriate public communication response to a nuclear or radiological emergency.

3.23. A public information officer should be assigned responsibility for strategic planning for public communication. The purpose of strategic planning (see paras 4.12 and 4.13) is to enable the public communication response to draw upon the resources stipulated in the public communication strategy and the public communication plan as necessary, under the specific circumstances of the emergency.

3.24. A public communication plan should include the following:

(a) A description of the organizational structure and responsibilities for the public communication response;
(b) A description of the concept of operations for communicating with the public during an emergency;
(c) A description of the available infrastructure and resources;
(d) A list of possible spokespersons and technical briefers (i.e. technical experts for the preparation of briefing materials) who have already been identified;

(e) A description of the tasks for public communication and a plan for allocating these tasks to staff;
(f) An operational manual specifying actions to be taken for public communication in an emergency and the stage at which they should be taken, based on the use of public communication tools [9];
(g) A description of any expected transfer of responsibilities for public communication in the transition phase.

3.25. Appropriate infrastructure and capabilities for public communication, both on-site and off-site, including human resources and financial resources, should be allocated. Such infrastructure and capabilities should be sufficient for ensuring effective and efficient communication during the emergency response phase and during the transition phase (see paras 5.15–5.29).

3.26. Those responsible for public communication in an emergency should anticipate that the need for public communication (and hence the associated infrastructure and resources) during the transition phase will be different from the need for public communication during the emergency response phase.

3.27. All resources necessary for public communication during the emergency response phase and during the transition phase should, as far as practicable, be specified, allocated and evaluated at the preparedness stage. This includes the potential long term availability of personnel and of infrastructure and equipment for public communication.

3.28. The public communication plan should be reviewed at least once a year and should be revised as necessary at the preparedness stage, taking into account lessons from exercises and from actual emergency responses.

Responsibilities and organizational structure

3.29. There may be numerous organizations involved in public communication during a nuclear or radiological emergency: at the facility level, local level, national level, regional level or international level. Arrangements should be made to ensure that the responsibilities for public communication tasks (see paras 3.98–3.121) at all levels of the emergency response are specified and understood.

3.30. The responsibilities, tasks and coordination of the various organizations that would be involved in public communication during an emergency are required to be planned and specified in advance (see para. 4.7 of GSR Part 7 [1]). The responsibilities, tasks and coordination of the organizations that would be

involved in public communication should be reflected in all organizational, local and national emergency plans.

Public communication in a unified command and control system

3.31. Paragraph 5.7 of GSR Part 7 [1] states:

> "Arrangements shall be made for the establishment and use of a clearly specified and unified command and control system for emergency response under the all-hazards approach as part of the emergency management system".

3.32. Public communication should operate as part of the emergency management system (see Ref. [9]). Within the unified command and control system, the lead public information officer should be in direct contact with, and should report to, the head of the response organization.

3.33. In the emergency management system, responsibilities for decision making within the unified command and control system during an emergency response are required to be assigned to designated authorities at the policy, strategic and operational levels (see paras 4.1, 4.10 and 5.7 of GSR Part 7 [1]).

3.34. The responsibilities in the unified command and control system should include developing a system or methods for the coordination and harmonization of all communication to the public and the news media during an emergency. The relevant roles and responsibilities within the unified command and control system, as specified in the emergency management system, should provide for a 'one message, many voices' approach (see para. 2.34).

3.35. A public information officer should be included in the initial activation list at all levels of the unified command and control system when the response organization is activated. The public information officer should ensure that a channel for immediate communication to the public is initiated.

3.36. The unified command and control system should enable an emergency response to be scaled to the level warranted by the nature and severity of the emergency. The public communication response should also be scalable so that the associated organizational structure can be adapted to the nature and severity of the emergency and to the need for public information (see Ref. [9]).

3.37. The scope of the lead public information officer's role in the public communication response should include the authority to arrange for adequate

staffing at all times, including staff proficient in all the necessary skills (e.g. drafting press releases, acting as a spokesperson, monitoring social media), as well as adequate workspace and resources. The availability of these resources should be approved in advance.

3.38. Those responsible for public communication in an emergency should be prepared for a high level of public concern in a nuclear or radiological emergency. Those responsible for public communication should anticipate that the level of public concern and the demand for public information will not necessarily be commensurate with the actual hazard or threat.

3.39. Arrangements should be made, where appropriate, for an emergency in which public communication tasks exceed the capacity of the lead public information officer. In this case, a public information section should be established within the unified command and control system, with the lead public information officer as section head.

3.40. The lead public information officer:

(a) Should be responsible for strategic planning for the public communication response, based on the arrangements made at the preparedness stage;
(b) Should liaise with and consult the head of the emergency response organization and other relevant staff in the unified command and control system;
(c) Should assign additional staff to the public information section, as necessary.

3.41. Arrangements should be put in place for the lead public information officer to have direct access to decision makers in the unified command and control system for the purposes of information sharing, liaison and coordination.

3.42. Arrangements should be made at the preparedness stage for a clearly specified approval process for public information and official messages. Processes for the collection and dissemination of information should also be established at the preparedness stage. The approval process should be focused on providing accurate and verified information in a timely manner.

3.43. Templates (see Annex I for an example initial statement and an initial press release) should be approved at the preparedness stage to enable public communication in a timely manner.

3.44. Public communication tasks should be carried out by the lead public information officer and should be supported, as necessary, by a public information section. These public communication tasks are described in paras 3.100–3.121.

3.45. All public communication tasks should be clearly defined and should be assigned to staff in an organizational plan that describes the reporting authorities, required duties and expected deliverables of each of the positions within the public information section (see Annex II for an example of an organizational plan for a public information section).

3.46. The public communication tasks may be performed by staff from one organization or from several organizations, depending on the nature of the emergency. The roles and responsibilities assigned should be clearly specified at the preparedness stage and should be rehearsed through training and exercises.

3.47. Information on roles and responsibilities for communication with the public at national, local and international levels is provided in Ref. [9].

National authorities

3.48. Usually, several national authorities are involved in a response to a nuclear or radiological emergency. Public communication during an emergency should be coordinated at the national level to avoid miscommunication and inconsistency between the various national authorities involved in the emergency response.

3.49. National authorities involved in public communication may include the competent authority under the Convention on Early Notification of a Nuclear Accident [11] and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency [12], a national coordinating authority, a disaster management authority, a national health and welfare authority, the regulatory body, technical and scientific support organizations, the corporate office of the operating organization, and other government departments and ministries.

3.50. If several national authorities are involved in an emergency response, their public communication should be limited to their respective areas of responsibility and expertise.

3.51. Key statements for which a ‘one message, many voices’ approach (see para. 2.34) is taken should be coordinated with all other national authorities involved in the emergency response through the unified command and control system. This coordination mechanism should be established as part of emergency

plans and arrangements, and its capabilities should be tested by means of regular training and exercises.

3.52. At the preparedness stage, a point of contact for public communication should be established at each national authority and the contact details should be communicated to all response organizations.

3.53. As far as possible, appropriate technology and equipment for communicating between these points of contact for public communication should be prepared, tested, exercised and maintained at the preparedness stage.

3.54. The arrangements made between response organizations should be documented in the public communication plan. The arrangements should be consistent with the arrangements for responding to conventional emergencies, such as fires or releases of hazardous chemicals, or to natural disasters, such as storms or earthquakes.

3.55. National authorities should make prior arrangements to provide information to the public outside areas affected by an emergency. National authorities should make specific prior arrangements to provide information to those who may be concerned for relatives in areas affected by an emergency or who may be concerned by the possibility of goods and food products being contaminated.

3.56. Public information officers should be familiar with the national emergency plan, including the roles and responsibilities of the various national authorities and officials, as well as with relevant national legislation and regulations.

3.57. To the extent possible, bilateral and multilateral agreements should be established at the preparedness stage on the coordination necessary for disseminating accurate information on an emergency to the public in neighbouring States in a timely manner. A coordination mechanism (e.g. using national disaster response tasks forces or regional emergency response networks) prepared and exercised in advance should be established by the organization in the State with the main responsibility for the public communication response in an emergency.

3.58. Public information officers should be provided with opportunities to be involved as observers in the emergency exercises of neighbouring States.

Local authorities

3.59. Requirement 10 of GSR Part 7 [1] states:

> "**The government shall ensure that arrangements are in place to provide the public who are affected or are potentially affected by a nuclear or radiological emergency with information that is necessary for their protection, to warn them promptly and to instruct them on actions to be taken.**"

3.60. Local authorities and, as applicable, national authorities should put in place arrangements to provide the public with information that is necessary for their protection. The preparations should include the provision of reliable channels of communication (e.g. warning sirens, mobile or fixed loudspeakers, local television and radio stations, mobile text messaging, warning apps), the preparation and recording, as appropriate, of announcements in the main languages spoken by the population, and the designation of staff to make announcements.

3.61. Announcements on an emergency response should be prepared in other languages, as appropriate. For facilities in category I or II and areas in category V (see table 1 and para. 5.45 of GSR Part 7 [1]), it should be ensured that announcements are comprehensible to all those who might be affected by an emergency. This includes the permanent population, transient population groups and special population groups or those responsible for them, and special facilities within the emergency planning zones and emergency planning distances. It should also be considered, for example, whether to prepare suitable information for schools and hospitals.

3.62. Arrangements should be made to inform the public promptly of protective actions and other response actions during an emergency, and of other activities for the protection of human life, health, property and the environment. Extensive communication should be undertaken if an evacuation is ordered or if long term measures for the public are necessary, or could become necessary.

3.63. Arrangements should be made for the coordination of local authorities and national authorities within the unified command and control system to avoid inconsistencies between statements issued at the different levels.

3.64. The local authorities' spokespersons should ensure that they are aware of information that is being disseminated about emergency response actions taken and risk assessments performed at the national level and in neighbouring areas.

Equally, national spokespersons should be aware of information that is being disseminated at a local level.

3.65. Paragraph 5.45 of GSR Part 7 [1] states that for facilities in category I or II and areas in category V, "The effectiveness of these arrangements for public information shall be periodically assessed." The assessment should include consultation with the public by conducting regular public surveys, holding discussion groups and evaluating public understanding during exercises.

International organizations

3.66. International organizations should ensure, to the extent possible, that their public information is consistent with public communication by other international organizations and by the State in which the emergency arises.

3.67. Under the Joint Radiation Emergency Management Plan of the International Organizations [13][12], the IAEA, as the lead international organization for coordinating the inter-agency response to a nuclear or radiological emergency, should ensure that international organizations participate in the response to an emergency, as appropriate, including the public communication response.

3.68. International organizations participating in the public communication response to an emergency should ensure that:

(a) Information on their public communication is disseminated among the international organizations of the Joint Radiation Emergency Management Plan of the International Organizations [13].
(b) Public information is factual and accurate and is issued based on the roles and responsibilities of, and actions taken by, the respective international organizations. This public information should include press releases, interviews, postings on social media and situation reports by organizations participating in the public communication response.
(c) Communication is coordinated between the organizations of the Joint Radiation Emergency Management Plan of the International Organizations [13]. If the subject matter of press releases, interviews,

[12] The Inter-Agency Committee on Radiological and Nuclear Emergencies is an inter-agency coordination mechanism to ensure that arrangements for emergency preparedness and response at the international level are consistent. The Committee, which comprises relevant international intergovernmental organizations, maintains the Joint Radiation Emergency Management Plan of the International Organizations.

postings on social media or situation reports involves the competence and mandate of two or more organizations, the respective organizations should consult each other, as necessary, under the ‘one message, many voices’ approach (see para. 2.34).

3.69. If a message is to be released jointly by organizations under the Joint Radiation Emergency Management Plan of the International Organizations [13], communication should be coordinated. The coordination should have the goals of agreeing on the content in a timely manner and of ensuring, to the extent possible, that press releases and other communications contain consistent messages and information. If this is not possible, the international organizations should limit their public information to their own area of competence.

3.70. If an international organization receives a request for assistance in the response to a nuclear or radiological emergency, the international organization should coordinate with the other international organizations in accordance with the Joint Radiation Emergency Management Plan of the International Organizations [13] and obtain clearance from the requesting State before issuing information on the emergency to the public and the news media.

INFRASTRUCTURE AND RESOURCES

3.71. Appropriate infrastructure for public communication should be developed, in accordance with the results of the hazard assessment and the identified potential consequences of a nuclear or radiological emergency, irrespective of the initiator of the emergency. The infrastructure for public communication should be described in the public communication plan (see para. 3.24(c)).

3.72. The infrastructure for public communication should be robust and should apply the concept of redundancy (see paras 3.83–3.85). The components of the infrastructure for public communication should be maintained and, as necessary, developed to ensure their regular upgrading and modernization. Resources should be designated for the development and continuing maintenance of the infrastructure for public communication.

Personnel

3.73. Arrangements should be made to meet the requirements of para. 6.10 of GSR Part 7 [1], which states:

> "Appropriate numbers of suitably qualified personnel shall be available at all times (including during 24 hour a day operations) so that appropriate positions can be promptly staffed as necessary following the declaration and notification of a nuclear or radiological emergency."

3.74. Sufficient numbers of personnel should be available to conduct public communication in a timely manner during a nuclear or radiological emergency. These personnel should include an adequate number of public information officers to provide public information (i.e. to the public and the news media and for social media), internal communication, on-line communication and monitoring of media. Situations such as outbreaks of disease, pandemics and other similar situations might preclude or limit personnel from assuming their duties. Arrangements should foresee means to ensure operational resilience to sustain effective public communication in such situations.

3.75. Trained spokespersons and technical briefers (i.e. technical experts for the preparation of briefing materials) and experts in fields such as health physics, radiation protection, medical counselling and psychological counselling should also be available, as and where needed, for public communication.

3.76. Sufficient numbers of personnel should be available to respond to misinformation and rumours in a timely manner and to respond to requests for information from the public and the news media.

3.77. A staffing plan should be prepared for the public information officers and other communication personnel. Depending on the nature, severity and progression of an emergency, a team of public information officers may have to participate in the response and to provide regular public information during a 24/7 operation for an extended period.

3.78. Extra staffing for communication may be necessary for responding to enquiries from the public during a nuclear or radiological emergency. The number of staff necessary to cover dedicated telephone hotlines and to perform tasks relating to social media should be estimated at the preparedness stage. A plan for making such personnel available should be prepared and exercised.

3.79. All personnel involved in public communication, including the setting up and staffing of telephone hotlines, should be regularly trained and should participate in exercises.

Infrastructure

3.80. The infrastructure necessary for public communication in a nuclear or radiological emergency should be available at all times. The available infrastructure should include all necessary systems for receiving and disseminating information, for coordinating and communicating with other elements of the emergency response operation, and for communicating with and monitoring of traditional media (e.g. the press, television and radio stations), on-line news media and social media.

Off-site information centres

3.81. Depending on the scale of the emergency, off-site information centres for public communication — fixed, mobile or virtual (i.e. in an on-line setting) — should be used to provide effective coordination of public information activities and related activities in a nuclear or radiological emergency. Off-site information centres should be either integrated within existing fixed or mobile units or set up separately for operations in public communication.

3.82. Off-site information centres:

(a) Should be established at the preparedness stage and should be kept ready for use;
(b) Should be made known to the news media in advance of public communication in an emergency;
(c) Should provide for effective coordination and control of all public information and related activities for public communication within the unified command and control system;
(d) Should provide sufficient workspace and facilities for the necessary public communication staff and for media representatives to interact and work with the public communication staff, as appropriate;
(e) Should provide systems for public information officers to exchange information and data throughout the unified command and control system.

Redundancy

3.83. The concept of redundancy is the provision of alternative (identical or diverse) structures, systems and components so that any single structure, system or component can perform the required function irrespective of the state of operation or failure of any other.

3.84. The concept of redundancy should be applied to all planning for infrastructure and resources. This includes the provision of backup equipment and systems, the training of multiple staff for the same responsibilities and tasks, and the use of different channels of communication and different service providers.

3.85. Paragraph 5.69 of GSR Part 7 [1] states:

> "Arrangements shall be made for providing useful, timely, true, clear and appropriate information to the public in a nuclear or radiological emergency, with account taken of the possibility that the usual means of communication might be damaged in the emergency or by its initiating event (e.g. by an earthquake or by flooding) or overburdened by demand for its use."

These arrangements should include the provision of redundant infrastructure to compensate for possible loss of power resulting from a nuclear or radiological emergency or from its initiating event, as appropriate.

Financial resources

3.86. To maintain a high level of readiness, the public communication programme for a nuclear or radiological emergency should receive dedicated and adequate funding.

3.87. The financial resources allocated for the public communication programme should be sufficient to ensure effective and efficient application of the public communication plan in routine activities as well as during emergency response activities. The financial resources allocated should include funding for:

(a) Training and exercises;
(b) Communication equipment and facilities;
(c) Designation of (and, as necessary, contracts for) off-site information centres, additional personnel and equipment necessary for public information officers for communication in an emergency.

3.88. The financial resources allocated should enable the funding of analyses to verify that the objectives and goals set out in the public communication plan are being met, that actions specified in the plan are being (or will be) implemented, and that the plan is effective.

3.89. The use of contracted services should be considered for activities that do not need to be carried out by regular staff members but are necessary for ensuring an effective public communication response.

3.90. The use of contracted services for the provision of certain communication activities during a response should be assessed against performance indicators when procured at the preparedness stage and should be included in exercises in advance of an emergency to verify that the requested service can be provided in a timely manner when needed. Such contracted services might include, as appropriate, translation, web site hosting, acquisition of additional bandwidth, printing, rental of equipment, temporary administrative and logistical assistance services, and setting up a telephone hotline.

3.91. The performance assessments undertaken when procuring the services and the subsequent exercises should take into account whether and how the contracted services would be provided in the event of an emergency in which the electricity supply or means of communication or other infrastructure has been affected.

SPOKESPERSONS AND TECHNICAL BRIEFERS

3.92. The spokesperson, as the ‘public face’ of the organization’s public communication response and therefore of the emergency response, plays a key part in gaining and maintaining public trust in the emergency response and in the response organizations.

3.93. Possible spokespersons and technical briefers for the preparation of briefing materials in support of the spokesperson should be identified at the preparedness stage. Detailed operational guidance on selecting and preparing a spokesperson is provided in Ref. [9].

3.94. The selection of the spokesperson should be based primarily on the person’s ability to project authority and his or her communication skills and capacity to build a relationship with the audience based on authority and trustworthiness.

3.95. The spokesperson should be appropriate for the severity of the emergency. For a severe emergency, the spokesperson should be the head of the response organization or the head of a higher organization. For less severe emergencies, a less senior manager or a public information officer should act as spokesperson. This also applies for recurrent briefings for the news media after the initial stages of an emergency.

3.96. The selection of technical briefers should be based primarily on relevant technical expertise and communication skills with respect to particular audiences.

3.97. Technical briefers should be technical experts in relevant subject matter, for instance experts in radiation protection or related fields. Technical briefers should prepare briefing materials in support of the spokesperson, for example for use in briefings for the news media on topics and questions relating to the subject matter of their expertise.

PUBLIC COMMUNICATION TASKS

3.98. The selection process for suitable individuals for core public communication tasks and for auxiliary tasks should take into account the specific skills necessary and the job descriptions for each role (e.g. spokesperson, technical briefer, public information officer), as well as the personal characteristics necessary to perform under circumstances of high demand and tremendous stress in an emergency.

3.99. The level of performance and the resilience necessary for roles in public communication should be considered. Suitable personal characteristics include the ability to be effective in difficult situations, to solve problems effectively and efficiently, and to cope in extraordinary and unpredictable circumstances.

Core public communication tasks

Production and writing

3.100. For efficient communication in an emergency, various materials should be prepared, to the extent possible, at the preparedness stage. These materials should include templates for press releases and statements, presentations for briefings for the news media, background information, and sample questions and answers.

Relations with traditional media and on-line news media

3.101. Relations with traditional media (e.g. the press, television and radio stations) and on-line news media should be developed and maintained to enable interactions, communication and liaison with journalists from media outlets such as newspapers, news magazines and television and radio stations, and from on-line news sites.

3.102. Key journalists and news media should be identified at the preparedness stage. Routine communication should be established with the journalists identified.

Social media

3.103. Arrangements should be made for a presence on relevant social media in an emergency to provide a means to disseminate information, to respond to misinformation and rumours, and to respond to enquiries as necessary and as possible. Organizations should be aware that a continuous presence on social media platforms (i.e. also during routine periods) significantly enhances the likelihood of effective communication on these platforms in an emergency (i.e. by increasing the experience of personnel responsible for social media and the number of followers on specific platforms).

3.104. Such arrangements should include the provision of sufficient human resources and infrastructure, and the development of standard operating procedures, including a streamlined approval process. These arrangements should enable a timely response to questions on relevant social media.

3.105. Relevant social media should be identified at the preparedness stage. The decision on which social media to use should be made on the basis of their usage and their audience.

3.106. Organizations should have clear guidelines in place for the official use of social media by members of response organizations. Organizations should have a clear code of conduct in place for the private use of social media by members of response organizations. This is because messages posted in a private capacity could be mistaken for official information if they include comments on an emergency.

Monitoring of the media

3.107. Media monitoring in a nuclear or radiological emergency is the process of reading, watching or listening to various media sources and looking for the

inclusion of specific keywords or topics of interest in relation to the emergency. Media monitoring should be conducted by using appropriate resources and technical systems to monitor traditional media, on-line news media and social media.

3.108. Media monitoring should be used to obtain data for use in strategic planning for public communication, and in developing and maintaining relations with traditional media and relations on social media.

3.109. Data from media monitoring should be used to enable public information officers to know what concerns the public, which information is reaching the public, and how the information is being interpreted. The data should also be used to help to identify misconceptions, rumours, and incorrect and misleading information (i.e. misinformation) that might be circulating in an emergency.

3.110. Media monitoring should be used to provide access to potentially valuable information for the response. For example, real time information from eyewitnesses or live coverage could help by raising awareness of the situation and could help in identifying hazards and problems.

Internal communication

3.111. Internal communication should be used to inform members of response organizations about an emergency and the emergency response and to meet their needs for information. Internal communication in this context should not include operational communication for organizing the emergency response. Internal communication should be considered to be a part of public communication, and it should not include confidential or proprietary information.

3.112. All members of response organizations should be able to act as channels for public communication. Arrangements should be made and should be communicated by means of internal communication to ensure that members of response organizations who are contacted by journalists know to refer such requests to the public information section.

Other public information activities

3.113. Public information activities other than those conducted to provide public information for traditional media, on-line news media and social media include, as necessary, communicating with interested parties and providing additional information on emergency preparedness and response to the public. Such

activities should include, as appropriate, newsletters and two-way communication (e.g. telephone hotlines, public meetings).

On-line communication

3.114. The public information officers for on-line communication should be responsible for making messages from the response organization available on its web site. The maintenance of an emergency web page, which is activated during a severe emergency, should also be a responsibility of the public information officers responsible for on-line communication.

3.115. The public information officers responsible for on-line communication should be in close contact with the public information officers responsible for social media.

Auxiliary public communication tasks

Logistics and technical support

3.116. Logistics and technical support for the public information section should be provided through the unified command and control system. Logistics and technical support functions should include the setting up and maintenance of an off-site public information centre, telephone hotlines, and facilities for operation of the public information section.

3.117. Facilities for operation of the public information section include infrastructure for telecommunication and information technology, as well as the technical systems and administrative arrangements necessary for briefings for the news media.

Translation services

3.118. In accordance with para. 5.45 of GSR Part 7 [1], for facilities in category I and II and areas in category V, information on the response to a nuclear or radiological emergency "shall be provided in the languages mainly spoken by the population residing within the emergency planning zones and emergency planning distances." For facilities and activities and areas in other emergency preparedness categories (see table 1 of GSR Part 7 [1]), the provisions necessary for the translation of information for public communication during an emergency response should be arranged at the preparedness stage.

3.119. The capabilities of translation services should be adequate to provide translations into languages relevant for public communication during an emergency response. This should include capabilities to translate to and from all languages spoken by the population and capabilities to translate from these languages to English, and vice versa.

3.120. Consideration should be given to the use of translation services for languages spoken among foreign nationals living in areas affected by an emergency as well as languages spoken by the populations of neighbouring States. Plain language background informational material in the relevant languages should be developed at the preparedness stage.

3.121. Where national legislation requires that communication be conducted in more than one official language, mechanisms should be developed at the preparedness stage to ensure that the need for translation does not delay the release of information.

COMMUNICATION WITH AND CONSULTATION OF INTERESTED PARTIES

3.122. The public communication programme and the public communication plan should include interaction with interested parties at the emergency preparedness stage and should include arrangements for communication with and consultation of interested parties during an emergency response, as appropriate.

3.123. At the preparedness stage, key interested parties should be identified to the extent possible. Examples of key interested parties are presented in para. 4.35.

3.124. Regular communication with and consultation of key interested parties should be established at the preparedness stage to support greater understanding of protective actions or other response actions. This regular communication should aim to enhance the acceptance of decisions taken in a nuclear or radiological emergency.

3.125. With regard to regulatory bodies, para. 1.2 of GSG-6 [6] states:

> "The establishment of regular communication and consultation with interested parties will contribute to more effective communication by the regulatory body in a possible nuclear or radiological emergency."

3.126. Communication and consultation in an emergency should be based on the essential characteristics of public communication described in paras 2.3–2.21 to gain and maintain public trust. Established public communication networks should be used as a useful means to support consistent messaging in an emergency.

3.127. An evaluation should be carried out to determine the perceptions of different interested parties in relation to radiological health hazards and radiation risks, the channels of communication that interested parties use, and their differing needs and priorities. Measures for such an evaluation should include the monitoring of public opinion (e.g. by means of surveys), discussions in person and public meetings. Observations and lessons from the results of this evaluation should be incorporated into the public communication strategy. In particular, the public communication tools that are most effective at reaching various interested parties and the specific needs of interested parties for background information should be identified on the basis of the evaluation. Such an evaluation should be conducted regularly as the perceptions, needs and priorities of interested parties could change over time. Arrangements for public communication should be adapted accordingly.

3.128. Communication with and consultation of interested parties should be tested regularly, for example during emergency exercises.

PUBLIC COMMUNICATION TOOLS

3.129. The following communication tools should be used, as appropriate, for effective public communication in an emergency:

(a) Press releases;
(b) Initial statement;
(c) Statements for television and radio stations;
(d) Briefings for the news media;
(e) Communication on social media;
(f) Telephone hotlines;
(g) Background informational material;

(h) An emergency web page;
(i) Maps and mapping products[13].

The advantages and disadvantages of these and other communication tools are listed in Annex III. Example templates for press releases adapted for different types of emergency are provided in appendix I of Ref. [9].

Press releases

3.130. Templates for press releases in a nuclear or radiological emergency should be based on the organization's standard templates for press releases. The template should include the following:

(a) The issuing organization's name and logo;
(b) A clear indication that it is a press release about an emergency;
(c) The date and the time (in both local time and Coordinated Universal Time, UTC) of the press release;
(d) Contact details for enquiries from the news media or the public;
(e) Space for details of the emergency.

3.131. Generic templates for initial press releases in an emergency should be prepared at the preparedness stage to enable a quick initial public communication response.

3.132. On the basis of the communication strategy, various generic templates should be prepared for initial press releases, covering the scenarios identified in the communication strategy. These scenarios should include, as appropriate, an accident at a nuclear power plant, a lost radioactive source, and a nuclear or radiological emergency initiated by a nuclear security event.

3.133. The approval process for an initial press release should be completed within a target time. The aim should be to issue the initial press release within one hour of the initiation of the response.

[13] Mapping products are outputs from geographical data collection, analysis and processing that support decision making by providing visualizations with regard to plume dispersal information or radiological measurements across a geographic region overlaid on a map for rapid visual analysis.

Initial statement

3.134. At the preparedness stage, a template of a generic initial statement (for distribution through all relevant channels, including as a press release) should be prepared and approved for immediate release in the public communication response to a nuclear or radiological emergency, if deemed necessary by the lead public information officer. The availability and use of such a generic initial statement should enable immediate initial communication (including on social media) without specific information on the emergency being available.

3.135. A generic initial statement should be issued swiftly to contribute to limiting the spread of rumours and to gain and maintain public trust during the public communication response. An example template of an initial statement is provided in Annex I.

Statements for television and radio stations

3.136. A spokesperson should give a first statement for television and radio stations simultaneously with the issuing of a first press release or as soon as possible afterwards. Such a statement should be issued in the event of either of the following:

(a) When demand for such a statement is expressed in the news media or on social media;
(b) Whenever the lead public information officer considers that such a statement would further benefit the public's understanding of the circumstances of the emergency while gaining and maintaining public trust.

3.137. Arrangements should be made to identify possible locations for making statements for representatives of television and radio stations. These locations should not be in areas that might be subject to restrictions on access for reasons of safety or security. The locations should be easily accessible by representatives of television and radio stations.

3.138. Representatives of television and radio stations should, if possible, be given an opportunity to record a statement or to broadcast a statement live themselves.

3.139. If the lead public information officer deems it appropriate, such statements should be recorded by the organization and should be made available

on the organization's web site, to the news media and on social media. This might be necessary owing to time constraints or organizational constraints, for example.

3.140. If the lead public information officer deems it appropriate, statements for television and radio stations should also be provided via live streaming on suitable web sites.

Briefings for the news media

3.141. Briefings for the news media should be conducted when there is significant new information available pertaining to an emergency or when there is a high level of interest in the news media. Guidance on briefings for the news media is provided in Ref. [9].

3.142. Arrangements should be made to identify possible locations to hold briefings for the news media. These locations should not be in areas that might be subject to restrictions on access for reasons of safety or security. The locations should be easily accessible by news media representatives. Arrangements should be made to ensure that the following necessary infrastructure for briefings for the news media is available at these locations to enable news media representatives who are attending to receive the information and to process and communicate it:

(a) An audio system;
(b) A means for projecting or presenting text, charts, photographs, graphics, videos or other visual aids;
(c) A power supply for the equipment of news media representatives;
(d) Internet access.

3.143. The capacity of the locations should be such as to enable news media representatives to be accommodated adequately, taking into account the possible scale of an emergency and of the public communication response.

Communication on social media

3.144. A strategy for public communication by means of social media should be developed and implemented at the preparedness stage. The public information officers responsible for on-line communication on social media should set up accounts for the response organization on the most relevant social media, so as to reach a maximum number of users and to gain the necessary operational experience in social media outreach and audience engagement.

3.145. Communication on the most relevant social media should be continuous, and information as part of an ongoing risk communication strategy should be regularly shared with users at the preparedness stage. This is intended to help in gaining public trust, in gaining an audience and in ensuring that the use of social media in an emergency will not be new for the public information officers.

3.146. Those responsible for public communication in an emergency should take into account that social media will be the preferred means for making enquiries and receiving information for many audiences. Social media should be used as an effective method of reducing the need for individual enquiries by other means of public communication, such as telephone hotlines and email.

3.147. Those responsible for public communication in an emergency should anticipate that answers provided to questions raised on social media will be read by other users, including users in the news media.

Telephone hotlines

3.148. Arrangements should be made at the preparedness stage to ensure the availability of telephone hotlines and of trained operators to answer telephone enquiries from the public during a nuclear or radiological emergency. The arrangements for telephone hotlines for the public communication response should be scalable to the differing nature and severity of the emergency.

3.149. Arrangements should be made at the preparedness stage for the use of prerecorded messages for telephone hotlines, and for using telephone hotlines to provide the latest press release and recent information on protective actions and other response actions.

3.150. Arrangements should be made at the preparedness stage to ensure that telephone enquiries can be dealt with in the main languages spoken by the population.

Background informational material

3.151. Background informational material in support of the public communication response should be produced at the preparedness stage.

3.152. Background informational material should be such that it can be made available on the organization's web site, in traditional media and on-line news media,

at public meetings, on social media and on request. Background informational material should include a catalogue of frequently asked questions and answers.

3.153. Background informational material should include maps, graphics and basic information on nuclear energy, radiation protection, exposure pathways, protective actions and other response actions, the roles and responsibilities of response organizations, and on different types of nuclear or radiological emergency (see Annex IV for a list of useful background informational material). The background informational material should be regularly reviewed and revised, as appropriate.

3.154. Background informational material on the response to an emergency should be incorporated, as appropriate, into communication with interested parties (see paras 3.122–3.128).

Emergency web page

3.155. Arrangements should be made for all official information in a nuclear or radiological emergency and for contact details for use by the news media and by the public to be made available on the organization's web site.

3.156. For a severe emergency with significant interest from the public and the news media, a specific emergency web page should be made available. The emergency web page should be designed at the preparedness stage to offer information commensurate with the scale of the emergency. It should be designed to be easily activated, used and updated in a simplified workflow by public information officers without needing IT expertise. In particular, the arrangements for the emergency web page should allow those public information officers responsible for on-line communication, as well as others in the public information section, to upload material in predefined formats and without the need for technical support. Such material includes press releases, video statements, background information and other relevant official information. The emergency web page should be prepared at the preparedness stage.

3.157. In the public information section, arrangements should be made on the emergency web page for a specific group that is dedicated to responding to misinformation and rumours. Rumours on social media should also be addressed. Links to relevant information on the emergency web page and other web sites where accurate factual content is available should be provided on social media.

3.158. The emergency web page should have a clear, plain design for usability and ease of navigation, and it should be readily displayed on mobile devices. The use of colour and other design elements should clearly differentiate it from any promotional material elsewhere on the web site.

3.159. The design of the web page should ensure ease of access for all groups of the population, including special groups such as those with impaired vision or hearing.

3.160. The emergency web page should be designed in such a way that it displays only official information on the emergency. It should not include promotional material or other content that could be considered inappropriate in the context of an emergency. The emergency web page should not be accessible for the public when there is no emergency that warrants its use.

3.161. The organization's web site, including the emergency web page, should be hosted in such a way that the capacity of the server is sufficient for the volume of traffic to be expected in an emergency. The capacity of the server should undergo regular and realistic testing.

3.162. Disruption of the emergency web page that makes it inaccessible for a long period should be avoided. Such disruption could undermine the organization's trustworthiness and public trust in the emergency response. Therefore, organizations should place importance on securing their web sites against malevolent attacks.

3.163. Initiation and updating of the emergency web page should be included in relevant training.

PUTTING RADIOLOGICAL HEALTH HAZARDS IN PERSPECTIVE

3.164. In a nuclear or radiological emergency, the response organizations should expect to receive questions from the public and the news media on potential adverse consequences for human life, health, property and the environment. This has been demonstrated by experience from the response to past emergencies.

3.165. The Fukushima Daiichi Accident: Report by the Director General [14] states:

> "**Factual information on radiation effects needs to be communicated in an understandable and timely manner to individuals in affected areas in order to enhance their understanding of protection strategies, to alleviate their concerns and support their own protection initiatives.**"

3.166. Paragraph 5.72 of GSR Part 7 [1] states:

> "The government shall ensure that a system for putting radiological health hazards in perspective in a nuclear or radiological emergency is developed and implemented with the following aim:
>
> — To support informed decision making concerning protective actions and other response actions to be taken;
> — To help in ensuring that actions taken do more good than harm;
> — To address public concerns regarding potential health effects."

3.167. The 2012 Report by the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) [15] (see Annex V) distinguishes between the following:

(a) Health effects that are demonstrable and therefore can be attributed[14] to radiation exposure;
(b) Radiation risks, or possibilities of harm usually associated with radiation exposure, which could only be inferred in possible or future exposure situations and are used mainly for radiation protection purposes.

3.168. Health effects that are objectively and scientifically attributed to radiation exposure have been considered in the past in parallel with those health effects that are possibly associated with radiation exposure but cannot be demonstrated and for which risks can only be subjectively inferred. This has created communication

[14] In the context of the UNSCEAR 2012 Report [15] and this Safety Guide, 'attributability' refers to whether a manifest health effect in an individual or a manifest increase in frequency of health effects in a population is capable of being ascribed as having been induced by radiation exposure.

problems, which have sometimes been detrimental to the people to be protected and have resulted in psychological harm to the people affected. Reference [14] states:

> "A number of studies on psychological conditions following the Fukushima Daiichi accident have been performed. …According to these studies, communication and dissemination of accurate information to the public at an early stage and during the development of the accident contributed to the alleviation of undesired psychological reactions [16]".

3.169. In the context of this Safety Guide, the term 'radiological health hazards' is used in relation to health effects that can be attributed to exposure to radiation. Radiological health hazards in a nuclear or radiological emergency should be explained and put in perspective in a clear, accurate and comprehensible manner. Putting radiological health hazards in perspective is important when explaining clearly to the public and the news media any technical or scientific information in a nuclear or radiological emergency. It is equally important to put such hazards in perspective when addressing the primary public concerns (i.e. 'Am I safe?') in a nuclear or radiological emergency.

3.170. The system for putting radiological health hazards in perspective in an emergency should be developed at the preparedness stage for use in public communication at any stage.

3.171. The system for putting radiological health hazards in perspective should be developed with the involvement of relevant technical experts as well as professionals in public communication. The system should be developed in consultation with the public and other interested parties.

3.172. The concepts underlying the system for putting radiological health hazards in perspective should be sufficiently well understood by those involved in public communication to ensure that these concepts are consistently reflected at any stage. The system should be tested with selected audiences for its suitability and adequacy prior to its adoption.

3.173. The system for putting radiological health hazards in perspective should be suitable for use in informing the public and other interested parties of the reasons for complying with instructions on protective actions and other response actions (or, as appropriate, why no specific emergency response actions are necessary).

3.174. The system for putting radiological health hazards in perspective should be used to address public concerns about potential radiation induced health

effects. At the preparedness stage (as well as during an emergency response), those responsible for public communication should consider maintaining regular communication with and consultation of the public and other interested parties on concerns about potential radiological health effects. Such communication and consultation are intended at the preparedness stage, as well as during an emergency response, to support the effective implementation of protective actions and other response actions.

3.175. The system for putting radiological health hazards in perspective should support effective public protection and should not prevent the implementation of additional measures that are justified and optimized. Thus, such a system should not substitute the need for authorities to further implement monitoring and assessments, medical screenings and diagnosis as well as the need to conduct epidemiological studies, when appropriate, with the aim of making an accurate attribution of radiation induced health effects after a nuclear or radiological emergency. Instead, the system for putting radiological health hazards in perspective is intended to facilitate effective communication when detailed assessments are not yet available.

3.176. The following should be considered in developing a system for putting radiological health hazards in perspective:

(a) The rationale for taking protective actions and other response actions in a nuclear or radiological emergency;
(b) Health effects that have been scientifically attributed to exposure to radiation and the association of such health effects with indicators such as estimated doses or measured radiological quantities in an emergency;
(c) Public concerns and the need to respond to them in a clear and comprehensible manner;
(d) The public's perception of radiological health hazards in comparison with that of technical experts.

3.177. UNSCEAR [15] "does not recommend multiplying very low doses by large numbers of individuals to estimate numbers of radiation-induced health effects within a population exposed to incremental doses at levels equivalent to or lower than natural background levels" (see Annex V). UNSCEAR accepts that public health authorities might need to make projections of the number of radiation induced health effects within a population for comparative purposes when allocating resources, but it should not be inferred that such projections of health effects are anything other than hypothetical (see Annex V).

3.178. Calculations of the hypothetical numbers of health effects associated with exposure at low doses and low dose rates among a large population might be used, under certain circumstances, in the justification and optimization of protection and safety (see Annex V). However, the hypothetical results of such calculations are open to misinterpretation and misrepresentation, and they should not be used by those responsible for public communication on radiological health hazards.

3.179. Experience has shown that the approach to implementing precautionary radiation protection measures at low doses and low dose rates in planned exposure situations, including the associated dose limits, can be misinterpreted as providing demarcations for safe radiation exposure levels. This should be taken into account in the public communication strategy to avoid any misunderstanding and to bring clarity on the radiological health hazards relating to low doses and low dose rates (i.e. in accordance with the conclusions of the UNSCEAR 2012 Report [15]).

3.180. The inference[15] of radiation risks should continue to form a basis for precautionary radiation protection measures, as long as such measures are justified, in normal situations primarily (i.e. planned and existing exposure situations), including in the longer term after the nuclear or radiological emergency has been declared ended.

3.181. In a nuclear or radiological emergency, the public's perception of hazards might be associated not only with radiological health hazards but also with non-radiological factors such as anxiety and stress and their possible effects on health. The relevant authorities should differentiate between radiological health hazards and non-radiological factors in responding to questions from the public such as 'Am I safe?'. An example system for putting radiological health hazards in perspective is provided in the Appendix. If the radiological situation allows, the relevant authorities may consider answering questions from the public by referring, as appropriate, to the third level of the proposed example system ('no observable health effects resulting from radiation exposure') in the Appendix.

3.182. To avoid confusion and misleading the public into overestimating the radiological consequences, non-radiological considerations should be addressed separately from radiological consequences in a response to such questions raised by the public.

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[15] In this context and in line with the UNSCEAR 2012 Report [15], 'inference' relates to the process of drawing conclusions from scientific observations, evidence and reasoning in the presence of uncertainty, with a focus on prospectively inferring risk.

TRAINING AND EXERCISES

Training

3.183. Training programmes on public communication:

(a) Should be integrated into the organization's training programme for emergency preparedness and response;
(b) Should be regularly reviewed and updated to ensure that observations and lessons are current and that training is consistent with meeting requirements for emergency preparedness and response;
(c) Should be mandatory for those with responsibilities in emergency response, such as senior managers, technical experts, emergency response personnel, public information officers and spokespersons, personnel operating telephone hotlines, and should be in accordance with their duties in emergency response;
(d) Should be scheduled regularly.

3.184. Personnel who are, or who could be, part of the unified command and control system, including first responders, should be provided with sufficient information to understand the arrangements for public communication. Such personnel should also receive at least basic training in public communication. The basic training should cover possible difficulties in discussions with the public, the news media and other interested parties in an emergency.

3.185. Public information officers and others involved in the public communication response such as senior managers, spokespersons and technical briefers, and emergency response personnel, should be prepared for situations in which members of the public or news media representatives address questions to them, including questions raised on social media. Regular media training should be conducted on how to respond in such situations.

3.186. Public information officers should be provided with suitable training in strategies for communication in an emergency, risk perception and its social context, the importance of communication with and consultation of interested parties, and on understanding terminology and using it correctly (e.g. in relation to radiological health hazards and radiation risks).

3.187. In accordance with their respective roles and responsibilities, public information officers should be provided with training in:

(a) Preparation of clear, accurate and consistent messaging in a timely and transparent manner;
(b) Coordination of all public information;
(c) Characteristics and use of channels of communication, platforms and tools;
(d) Best practices in communication of radiological health hazards and radiation risks;
(e) Delivery of statements and interviews on television and radio stations and for other media.

3.188. Specific training of public information officers should include:

(a) Basic knowledge of the emergency management system (see para. 3.2);
(b) Basic knowledge of relevant scientific and technical subject matter;
(c) Training of public information officers in providing media training for technical briefers and other personnel, including first responders, for their role in public communication, to enhance their effectiveness and their understanding of the demands;
(d) Training on how to convey scientific concepts clearly, such as the basics of radiation and radiological health hazards, radiation risks and emergency response actions;
(e) Training on bilateral and multilateral liaison with other States to ensure that any possible transboundary impacts on people, property and the environment in an emergency are considered and to provide for any necessary exchange of information.

3.189. Spokespersons and technical briefers should be trained in engaging media, preparing for and giving interviews and on-camera statements, demonstrating understanding and empathy, and dealing with strong feelings and hostile questioning. The training should cover communicating about radiological health hazards and radiation risks, and on communicating in an emergency, and should include associated practical sessions and exercises.

3.190. Training of spokespersons should include training on protecting confidential or classified information, or information that is subject to legal restrictions, and on avoiding speculation and avoiding making judgements and inappropriate statements.

Exercises

3.191. Exercises, including drills, should be conducted to test and validate the effectiveness of the public communication programme. These exercises and drills should support the continual improvement of plans, procedures and response arrangements, and should take into account the following:

(a) Drills and exercises should be as realistic as possible.
(b) A programme of regular drills and exercises for the public communication programme should be integrated into the drills and exercises of the emergency preparedness and response programme.
(c) Drills and exercises should be conducted to test the knowledge and expertise of senior managers, technical experts, emergency response personnel, public information officers, spokespersons and others responsible for public communication.
(d) Regular exercises should include all national authorities with responsibilities in emergency response.
(e) Contracted services for public communication should be periodically tested in drills and exercises.
(f) Drills focusing only on public communication should be carried out.
(g) Spokespersons should be regularly tested in drills and exercises, and their performance should be assessed by means of realistically simulated media interactions.
(h) Others with specified responsibilities in the public communication programme, such as technical briefers, emergency response personnel, and personnel responsible for the web site and social media, should be regularly tested in drills and exercises.
(i) Intergovernmental organizations, as part of their programmes of drills and exercises, should exercise public communication to ensure consistent messaging as described in the Joint Radiation Emergency Management Plan of the International Organizations [13] (see paras 3.65–3.69).

3.192. The drills and exercises for the public communication programme should include tests of the communication strategy, including processes and procedures for the following:

(a) Provision of clear, accurate and consistent messaging in a transparent and timely manner;
(b) Collection and assessment of information in a public communication response;

(c) Coordination of response organizations and other authorities providing official information;
(d) Development of messages, including communication of uncertainties;
(e) Necessary coordination and consistency of messaging and necessary approval of messages;
(f) Dissemination of information;
(g) Monitoring of media.

3.193. Arrangements should be made for an evaluation, a review and a report following the conclusion of each drill and exercise. The purpose of the evaluation and review should be to identify gaps, observations and lessons. The report should recommend any necessary improvements for an effective public communication response within the emergency management system.

3.194. Arrangements should be made for regular drills and exercises to ensure that the skills of public information officers, spokespersons, technical briefers and others responsible for public communication are sufficient for an emergency response.

4. ARRANGEMENTS FOR PUBLIC COMMUNICATION IN EMERGENCY RESPONSE

GENERAL

4.1. This section provides recommendations on public communication in the response to a nuclear or radiological emergency. As an effective public communication response in an emergency is contingent on the level of preparedness, public communication in emergency response should meet the recommendations provided in Section 3.

4.2. Public communication should be part of the emergency management system in an emergency response. Those responsible for public communication should be involved from the start of an emergency response. Relevant information on facilities and activities should be shared at the preparedness stage with those responsible for public communication in an emergency.

ACTIVATING A PUBLIC COMMUNICATION RESPONSE

4.3. Those responsible for public communication in an emergency should anticipate that the public, the news media and other interested parties will demand detailed information from response organizations immediately after an emergency is declared. However, not all relevant information will be available for the public communication response.

4.4. An organization's public communication response should be activated as soon as there are indications of an emergency. Public communication should be listed as a priority in an organization's internal notification and alarm system for an emergency.

4.5. The lead public information officer should have immediate and continuing access to decision makers in the response to an emergency as part of the unified command and control system. This access to decision makers should ensure the earliest possible participation in the response by public information officers. Access to decision makers should also ensure that those responsible for public communication have access to the most relevant and recent information available.

Initial statement

4.6. The lead public information officer should have the authority to release an approved initial statement (see paras 3.134 and 3.135 and Annex I), as appropriate, before information on an emergency becomes available, and if there are requests for information by the news media or if an emergency is under discussion on social media.

Spokespersons and technical briefers

4.7. The spokesperson should address the news media in a timely manner and at regular intervals by means of statements to camera, audio statements or recorded video, or in briefings for the news media. The spokesperson should provide the news media with statements and quotes for print, audio and video communications.

4.8. Technical briefers should assist the spokesperson to provide information on the subject matter in which they are technical experts, as deemed necessary for the emergency response.

4.9. Spokespersons and technical briefers suitable for the emergency response should be appointed from among those identified and trained at the preparedness stage (see paras 3.92–3.97).

PUBLIC COMMUNICATION TASKS

4.10. Public communication tasks should be performed by the public information section (see para. 3.37 and Annex II). The tasks should be coordinated by the lead public information officer.

4.11. The public communication response of the lead public information officer should be based on a graded approach (see para. 1.17). The graded approach should be used to determine whether the lead public information officer will work alone in the public communication response or will work with a public information section of appropriate size.

Core public communication tasks

Strategic planning

4.12. On the basis of the communication strategy (see paras 3.11–3.17) and the communication plan (see paras 3.18–3.24) developed at the preparedness stage, the lead public information officer should conduct strategic planning for the public communication response to the emergency and should set priorities.

4.13. Strategic planning for the public communication response to the emergency should include the following:

(a) An assessment for public communication purposes based on data from media monitoring;
(b) Specification of key messages;
(c) Identification of key channels of communication and key audiences;
(d) Decisions on the public communication to be undertaken, in accordance with decisions made in the unified command and control system.

Production and writing

4.14. Informational material prepared at the preparedness stage (see para. 3.100) should be used in the initial response to an emergency. In addition, informational material specific to the situation should be prepared for the public

communication response, in addition to materials prepared at the preparedness stage. This informational material should be disseminated by means of the public communication tools that were identified at the preparedness stage.

4.15. The informational material should include:

(a) Press releases;
(b) Statements;
(c) Presentations for briefings for news media;
(d) Background information that was not prepared in advance;
(e) Frequently asked questions and answers;
(f) Recorded video statements.

4.16. The informational material should be used, as appropriate, by those responsible for public communication who are responsible for relations with traditional media and on-line news media, for relations on social media and for telephone hotlines.

Relations with traditional media and on-line news media

4.17. Information should be provided to traditional media (e.g. newspapers, television and radio stations) and on-line news media by means of briefings for news media, statements to camera, recorded video statements, quotes and interviews (see paras 3.101 and 3.102).

4.18. During an emergency, public information officers should maintain relations with traditional media and on-line news media. Public information officers should be available at all times during the emergency response to deal with enquiries by telephone and by email from the news media.

Social media

4.19. Public information officers responsible for on-line communication on social media (see paras 3.103–3.106) should ensure that official information on an emergency is made available on social media as early as possible.

4.20. Public information officers should ensure that communication with social media users is established and maintained, as appropriate. This communication should include links to relevant information on the emergency web page and other web sites where accurate factual content is available.

Monitoring of the media

4.21. Media monitoring (see paras 3.107–3.110) for sources in traditional media, on-line news media and social media should be established or extended as soon as possible at the start of the response phase. Keywords and search terms selected at the preparedness stage should be reviewed and should be complemented as necessary with keywords particular to the emergency, such as the name of the facility or its location. Particular attention should be paid to identifiers such as 'hashtags' or similar markers used by the response organizations, the public or the news media to identify messages relating to the emergency.

4.22. Data from media monitoring should be used to identify misinformation and rumours and topics of particular interest to the public and to assess whether additional public information is necessary.

4.23. Data from media monitoring should be continually provided to the public information section and the unified command and control system.

Internal communication

4.24. Internal communication (see paras 3.111 and 3.112) should be used to provide response organizations, and relevant persons who are not directly involved in the response, with information that is to be issued to the public and the news media.

4.25. Internal communication should be carried out when public information is, or is intended to be, provided to external audiences. If information is provided by internal communication before it is provided to external audiences, the information should be on a need-to-know basis and confidentiality should be maintained to avoid intentional or unintentional unofficial release of the information.

Other public information activities

4.26. Other public information activities (see para. 3.113) should be conducted to coordinate and organize the public communication response for interested parties, as appropriate, and to provide additional information on the emergency to the public, as necessary.

On-line communication

4.27. All official information should be made immediately available on the organization's web site in an emergency response (see paras 3.114 and 3.115).

4.28. An emergency web page (see paras 3.155–3.163) should be activated as part of the response to any emergency that is likely to be of significant interest to the public and the news media. Activating an emergency web page should also be considered in the case of an event that receives attention in the news media owing to misinformation or rumours.

4.29. The emergency web page should be monitored constantly by technical staff, who should take action if the volume of traffic is expected to exceed the capacity of the server and jeopardize the availability of the web site during the emergency response.

Auxiliary public communication tasks

4.30. Auxiliary public communication tasks, such as logistics, technical support and translation services, should be activated as necessary in support of an emergency response (see paras 3.116–3.121).

4.31. If deemed necessary by the lead public information officer, telephone hotlines, public information centres, facilities for operation of the public information section and systems for coordination of the public communication response should be activated as soon as possible in an emergency, in accordance with the public communication plan. This should include telecommunication and information technology infrastructure, as well as the technical systems and administrative arrangements for briefings for news media.

4.32. All official information on the response to a nuclear or radiological emergency for facilities in categories I and II and areas in category V (see table 1 of GSR Part 7 [1]) is required to be provided in the main languages spoken by the population residing within the emergency planning zones and emergency planning distances (see para. 5.45 of GSR Part 7 [1]).

4.33. Any necessary translations of information for public communication during an emergency response should be provided. Translations should be provided in languages relevant for public communication during the emergency response. This should include translations to and from all languages spoken by the population, and translations, as appropriate, from these languages to English, and vice versa.

4.34. If the lead public information officer deems that there is significant interest in the emergency from the international news media, relevant official information should be translated into English, as necessary. However, the need for translation

should not delay the first issue of information in the main languages spoken by the population.

COMMUNICATION WITH INTERESTED PARTIES

4.35. Interested parties identified at the preparedness stage or during the emergency response should be provided with relevant information about an emergency (see paras 3.122–3.128). Experience from past emergencies shows that interested parties in an emergency response include the following:

(a) The population affected (directly or indirectly) by an emergency;
(b) The first responders and members of the response organization;
(c) Those working for response organizations but not directly involved in the response;
(d) The news media;
(e) Community leaders, business leaders and the scientific community, who help to disseminate relevant information to their respective audiences;
(f) International and non-governmental organizations;
(g) Personnel in agricultural, fishing and forestry sectors, and owners affected and concerned for property and for the environment;
(h) Operating organizations, registrants and licensees, and suppliers of and for nuclear power plants or other facilities and activities;
(i) The general public (locally, nationally, regionally, internationally);
(j) Health professionals;
(k) Governmental organizations and government officials, including the regulatory body.

4.36. The concerns and information needs of interested parties should be dealt with in a timely manner on the basis of the public communication strategy and public communication plan developed at the preparedness stage, as well as the strategic planning for public communication by the lead public information officer. Public information officers should make use of the topics of interest identified at the preparedness stage, as well as data from media monitoring and other relevant information.

4.37. Public information officers should respond to specific concerns and questions of the affected population and other interested parties. Arrangements should be made for setting up dedicated telephone hotlines, organizing public meetings and answering enquiries by email and on social media. To the extent

possible, arrangements should be made to enable communication with interested parties at any time.

COORDINATION OF PUBLIC COMMUNICATION

National coordination

4.38. All public communication by organizations involved in the emergency response, including local and national response facilities, should be coordinated under the unified command and control system to ensure consistent messaging in accordance with the 'one message, many voices' approach (see para. 2.34). The coordination should ensure that all organizations engaged in the public communication response confine their communication to their respective mandates and areas of responsibility. There should be coordination between organizations at local, regional and national levels, as appropriate to the State.

4.39. Regular briefings for all public information officers and relevant staff should be conducted in person, by video conference or by comparable means. These regular briefings should aim to provide an overview of the emergency and the emergency response, and they should provide a platform for identifying issues and challenges.

International coordination

4.40. Article 2(a) of the Convention on Early Notification of a Nuclear Accident [11] states:

> "In the event of an accident specified in article 1[16]…, the State Party referred to in that article shall:

[16] Paragraph 1 of article 1 of the Convention on Early Notification of a Nuclear Accident [11] states: "This Convention shall apply in the event of any accident involving facilities or activities of a State Party or of persons or legal entities under its jurisdiction or control, referred to in paragraph 2 below, from which a release of radioactive material occurs or is likely to occur and which has resulted or may result in an international transboundary release that could be of radiological safety significance for another State." Paragraph 2 [11] states: "The facilities and activities referred to in paragraph 1 are the following: (a) any nuclear reactor wherever located; (b) any nuclear fuel cycle facility; (c) any radioactive waste management facility; (d) the transport and storage of nuclear fuels or radioactive wastes; (e) the manufacture, use, storage, disposal and transport of radioisotopes for agricultural, industrial, medical and related scientific and research purposes; and (f) the use of radioisotopes for power generation in space objects."

(a) forthwith notify, directly or through the International Atomic Energy Agency…, those States which are or may be physically affected as specified in article 1 and the Agency of the nuclear accident, its nature, the time of its occurrence and its exact location where appropriate".

4.41. Paragraph 5.48 of GSR Part 7 [1] states:

> "Arrangements shall be made by response organizations in a State to promptly provide information and advice to its nationals and to those people with interests in other States[29] in the event of a nuclear or radiological emergency declared beyond national borders, with due account taken of the response actions recommended in the State in which the emergency occurs as well as in the State(s) affected by that emergency….
>
> "[29] Examples of people with interests in other States include people travelling, people working and/or living abroad, importers and exporters, and people working in companies operating abroad."

This requirement should be met by providing public information and advice either directly or through the IAEA to any State that is potentially affected in the emergency for dissemination to its nationals.

4.42. Paragraph 5.36 of GSR Part 7 [1] states:

> "Arrangements shall be made such that information on emergency conditions, assessments and protective actions and other response actions that have been recommended and have been taken is promptly made available, as appropriate, to all relevant response organizations and to the IAEA throughout the emergency."

4.43. The IAEA should be informed of a significant public communication response in order to facilitate the international coordination of public communication.

4.44. The coordination of public communication among participating international organizations should follow the Joint Radiation Emergency Management Plan of the International Organizations [13] in coordination with response organizations to the extent feasible.

PUBLIC COMMUNICATION TOOLS

Press releases

4.45. If a press release is deemed necessary owing to the nature and severity of the emergency, the target time for issuing an initial press release should be within one hour and its release time should not exceed two hours after the public communication response has been activated by the public information officer (see paras 3.130–3.133). To avoid delay, the initial press release should normally be written in general terms and not contain details.

4.46. Press releases on the emergency should be in plain language and be comprehensible and should be issued to relevant journalists and media outlets simultaneously. Press releases should also be made available at the same time on the organization's web site and on social media.

4.47. Regular updates of press releases should be issued as new information becomes available for release.

Statements for television and radio stations

4.48. If there is demand for video material and audio material, a spokesperson should give a first statement for television and radio stations simultaneously with (or as soon as possible after) issuing a first press release (see paras 3.136–3.140).

4.49. Spokespersons and technical briefers should state what is known and the origin of the available information and should highlight what is not currently known and what is being done to find out more.

4.50. Spokespersons and technical briefers should not speculate. Speculation could undermine the organization's trustworthiness and could undermine public trust in the public communication response and in the emergency response in general.

4.51. Key statements should be video recorded, and the recording be made available on the organization's web site and on social media. A link to the video should be included in press releases to meet the needs of on-line media and social media.

Briefings for the news media

4.52. Briefings for the news media and press conferences should be conducted when there is significant information on the emergency or a high degree of attention in the news media (see paras 3.141–3.143).

4.53. Regular briefings for the news media should be conducted during an emergency to inform the news media, as necessary, and to contribute to continuing public communication.

4.54. Procedures for media briefings should be made clear to all spokespersons and technical briefers prior to the briefing. Journalists should be informed in advance of the procedures for the briefing. Consideration should be given in advance as to whether and how questions are to be taken and answered.

4.55. A time limit should be set for the duration of the briefing for the news media. The time limit for the briefing should be communicated to journalists prior to or at the beginning of the briefing.

4.56. The briefing for the news media should be moderated by the lead public information officer, if possible.

4.57. If possible, live streaming or dial-in audio access should be arranged for journalists who are unable to attend briefings in person, such as journalists in other States.

4.58. Briefings for the news media should be recorded by means of audio or video recording. A summary of key points of the briefing should be prepared in the form of a press release and for posting on-line, as appropriate.

Communication on social media

4.59. Public information officers responsible for on-line communication on social media should make official information available on relevant social media at the same time as it is made available on the organization's web site and by means of other channels of communication (see paras 3.144–3.147).

4.60. Social media should be used to communicate protective actions for those directly affected by the emergency and to address concerns and questions raised on social media.

4.61. Identifiers such as ‘hashtags’ for messages should be used on those social media used for public information in an emergency.

4.62. Public information officers responsible for on-line communication on social media should monitor social media and should respond in a timely manner to concerns, questions and rumours.

4.63. Specific attention should be paid by the responsible public information officers to all of the institutional social media accounts[17]on which the organization is active in order to ensure consistent messaging.

4.64. Staff from technical and scientific support organizations should be involved, as necessary, in preparing information to be made available on the organization’s social media.

Telephone hotlines

4.65. Telephone hotlines should be set up for dealing with enquiries from the public, the news media and other interested parties (see paras 3.148–3.150).

4.66. Telephone hotlines should be adequately staffed to be able to deal with the volume of calls to be expected during a public communication response. Staff from technical and scientific support organizations who can answer technical enquiries should be assigned, as necessary, to assist the staff of telephone hotlines.

4.67. Staff from technical and scientific support organizations should be involved, as necessary, in preparing technical briefings for the staff of telephone hotlines.

4.68. Prerecorded messages for telephone hotlines should be used to provide the latest press release and recent information on protective actions and other response actions. Prerecorded messages should also be used to direct callers to the emergency web page or to social media for the most recently released information on emergency response actions.

[17] Organizations may maintain more than one official social media account and may communicate to diverse audiences using varied social media channels that reach specific audiences.

Background informational material

4.69. Background informational material should be made available, as appropriate, on the organization's web site, at public meetings, on social media, in traditional media and on-line news media, and on request (see paras 3.151–3.154).

4.70. Background informational material should include a catalogue of frequently asked questions and answers. Written background informational material may be supported by graphics, such as illustrations or photographs of the facility or of the radiation source concerned (see Annex IV for a listing of useful background informational material).

4.71. Background informational material should be used, as appropriate, for communicating with the public, especially when little or no information on the emergency is available. Care should be taken that background informational material is clearly marked as such and clearly explained to distinguish it from official information issued on the emergency response.

Emergency web page

4.72. The emergency web page should be activated in accordance with the public communication plan or as deemed necessary by the lead public information officer if significant interest from the public and the news media is expected (see paras 3.155–3.163).

4.73. The emergency web page should be updated immediately when public information is issued. The emergency web page should provide a compilation of all public information on the emergency.

4.74. The emergency web page should include the latest press release and an archive of all previously issued press releases on the emergency, statements issued for television and radio stations and other video and audio statements, relevant background information and contact details for further enquiries.

4.75. Technical staff and scientific support organizations should be involved, as necessary, in preparing information to be made available on the organization's web site and other public informational material.

Maps and mapping products

4.76. If possible, maps and mapping products, such as maps that delineate plume dispersion or measurements, should be used to convey information to the public and the news media. Care should be taken to ensure that all maps and mapping products are clearly and accurately labelled and consistently presented. Maps and mapping products should be used, as appropriate, to provide information on the following:

(a) Areas known to be affected or potentially affected by a radioactive release;
(b) Recommendations on protective actions and other response actions, including an urgent protective action planning zone, a precautionary action zone, operational intervention levels, extended planning distances, and ingestion and commodities planning distances[18];
(c) Data from radiation monitoring, including data from aerial surveys;
(d) Data on the dispersion and deposition of an airborne plume;
(e) Other relevant information such as on the population affected or potentially affected, and on types of livestock and crop affected or potentially affected;
(f) Details of the organization responsible for issuing the maps and mapping products and its authority for issuing maps and mapping products.

4.77. Maps and mapping products should be regularly updated and reissued, as appropriate, to include new data (including from radiation monitoring) that have become available.

[18] Urgent protective action planning zone (UPZ): an area around a facility for which emergency arrangements have been made to take urgent protective actions in the event of a nuclear or radiological emergency to avert doses off the site in accordance with international safety standards. Precautionary action zone (PAZ): an area around a facility for which emergency arrangements have been made to take urgent protective actions in the event of a nuclear or radiological emergency to avoid or to minimize severe deterministic effects off the site. Operational intervention level (OIL): a set level of a measurable quantity that corresponds to a generic criterion. Extended planning distance (EPD): the area around a facility within which emergency arrangements are made to conduct monitoring following the declaration of a general emergency and to identify areas warranting emergency response actions to be taken off the site within a period following a significant radioactive release that would allow the risk of stochastic effects among members of the public to be effectively reduced. Ingestion and commodities planning distance (ICPD): the area around a facility for which emergency arrangements are made to take effective emergency response actions following the declaration of a general emergency in order to reduce the risk of stochastic effects among members of the public and to mitigate non-radiological consequences as a result of the distribution, sale and consumption of food, milk and drinking water and the use of commodities other than food that may have contamination from a significant radioactive release [7].

4.78. All maps and mapping products should include explanations in plain language. Comparisons that put radiological health hazards and radiation doses in perspective (see paras 3.164–3.182 and the Appendix) should be as clear and comprehensible as possible but need to remain accurate to avoid misleading the public.

International Nuclear and Radiological Event Scale

4.79. When communicating with the public, States may consider using the International Nuclear and Radiological Event Scale (INES) [17]. INES is intended as a tool for communicating the safety significance of nuclear and radiological events to the public.

4.80. States may use INES on a voluntary basis to rate events that occur within their territory. INES is not a notification or reporting system, and it should not be used in emergency response. The INES User's Manual [17] provides further guidance on the proper use of the INES scale in public communication.

RESPONDING TO MISINFORMATION AND RUMOURS

4.81. Those responsible for public communication in an emergency should expect that misinformation and rumours will be generated in the public domain, both intentionally and inadvertently.

4.82. Public information officers should take immediate action to counteract misinformation and rumours that could affect operations in the emergency response. Arrangements should be put in place to do the following:

(a) To monitor traditional media, on-line news media and social media and to counteract misinformation and rumours promptly;
(b) To respond to incorrect and misleading information (e.g. on social media) with accurate information;
(c) To monitor the origin and spread of any misinformation and rumours and to respond accordingly;
(d) To take account of the concerns of the public and the news media and to provide information in response to these concerns;
(e) To inform the news media of misconceptions, rumours and incorrect and misleading information (i.e. misinformation) that might be circulating and of their potential harmful consequences;
(f) To ensure that accurate and current information is regularly provided;

(g) To use the organization's web site or emergency web page to issue corrections to the most prevalent and the most harmful misinformation and rumours.

PUBLIC COMMUNICATION FOLLOWING THE TERMINATION OF AN EMERGENCY

4.83. Those responsible for public communication in an emergency should be aware that public communication in an emergency may need to be continued following termination of the emergency.

4.84. Arrangements should be made to ensure that communication with and consultation of interested parties can be continued for as long as there is significant interest. Arrangements should be made in anticipation of increased public interest in subjects such as liability and compensation, actions to provide for the well-being of the public and health issues.

4.85. Arrangements should be made for responding to questions concerning the immediate and long term consequences of the emergency. Arrangements should be made to continue to inform the public, as appropriate, about protective actions in place and ongoing recovery efforts.

5. ARRANGEMENTS FOR PUBLIC COMMUNICATION UNDER PARTICULAR CIRCUMSTANCES

GENERAL

5.1. There are specific circumstances that could influence public communication in a nuclear or radiological emergency. This section recommends arrangements for public communication under particular circumstances that necessitate additional considerations to those recommended in the previous sections.

5.2. Arrangements for public communication should be based on the essential characteristics of public communication as set out in paras 2.3–2.21. Such arrangements should take into consideration the challenges of public communication (see paras 2.39–2.64), irrespective of the particular circumstances.

NUCLEAR OR RADIOLOGICAL EMERGENCY INITIATED BY AN ACCIDENT

5.3. If a nuclear or radiological emergency is initiated by an accident, such as an operating error or equipment failure, those responsible for public communication in an emergency should expect interest from the public, the news media and other interested parties in the cause of the accident and in responsibilities and liabilities.

5.4. The provision of information might be difficult, for example due to legal reasons relating to an investigation of the accident. The essential features of public communication (see paras 2.3–2.21) should, however, be applied in relation to information on the cause of the accident and on responsibilities and liabilities.

5.5. The objectives of public communication (see paras 2.1 and 2.2) should be maintained, especially with regard to gaining and maintaining public trust in the emergency response.

NUCLEAR OR RADIOLOGICAL EMERGENCY INITIATED BY A NATURAL EVENT

5.6. Those responsible for public communication in an emergency should anticipate that if a nuclear or radiological emergency is initiated by a natural event (e.g. hurricane, earthquake, flood) or multiple events (i.e. the initial natural event and the subsequent events that give rise to the emergency), this could increase the complexity of the public communication response. Unconnected situations such as outbreaks of disease, pandemics and other similar situations might preclude or limit personnel from assuming their duties. Arrangements should foresee means to ensure operational resilience to sustain effective public communication in such situations.

5.7. Special attention should be paid to the coordination of the public communication response within the unified command and control system in an emergency initiated by a natural event. The public communication response should deal with all relevant aspects of the events in accordance with the responsibilities specified in the unified command and control system.

5.8. The public communication strategy and the public communication plan should give guidance on the use of public communication tools in the event of disruption of the communication infrastructure. The consequences of a natural event might disrupt infrastructure, and some means of public communication

(e.g. mobile communication services, landline telephone services) might be unavailable or might not be usable to the full extent. In a large scale loss of electric power transmission or connection to the Internet, radio broadcast might serve as an effective way to communicate to the broader public.

5.9. Plans should be developed, and pre-established messages should be prepared, for broadcast on television and radio stations as well as for possible dissemination on-line. At the preparedness stage, those responsible for public communication in an emergency should anticipate (to the extent possible) the impact of a natural event on the public communication response by applying the concept of redundancy, as outlined in paras 3.83–3.85.

NUCLEAR OR RADIOLOGICAL EMERGENCY INITIATED BY A NUCLEAR SECURITY EVENT

5.10. A nuclear security event is an event that has potential or actual implications for nuclear security that must be addressed [18]. A nuclear security event would typically involve criminal or intentional unauthorized acts involving or directed at nuclear material, other radioactive material, associated facilities or associated activities, or credible threats of such acts (e.g. theft of radioactive material or sabotage). A nuclear security event might also initiate a nuclear or radiological emergency, in which case the response will address the safety aspects and the nuclear security aspects of the emergency.

5.11. Paragraph 5.69 of GSR Part 7 [1] states that "These arrangements shall take into account the need to protect sensitive information in circumstances where a nuclear or radiological emergency is initiated by a nuclear security event."

5.12. In accordance with Ref. [18], the legislative and regulatory framework should provide for the establishment of regulations and requirements on protecting the confidentiality of sensitive information. Arrangements for public communication in an emergency initiated by a nuclear security event should be established at the preparedness stage. Guidance on protecting the confidentiality of information is provided in IAEA Nuclear Security Series No. 23-G, Security of Nuclear Information [19].

5.13. At the preparedness stage, public information officers should be made familiar with the nature of sensitive information and why such information cannot be issued (e.g. information could be sensitive for reasons of nuclear security or for legal reasons).

5.14. Requirements to protect sensitive information might be perceived by the public and other interested parties as compromising the essential characteristics of public communication (see paras 2.3–2.21). Therefore, the public communication response should explain, without compromising sensitive information, why certain types of information cannot be provided or why their release might be delayed. This should not prevent or delay the provision of any non-sensitive information that is essential to meeting the goals of emergency response, as listed in para. 3.2 of GSR Part 7 [1].

TRANSITION PHASE

5.15. Those responsible for public communication should anticipate that the need for public communication will change in the course of an emergency. During the emergency response phase, the primary focus of public communication will be on aspects that will support informed decision making and effective protective actions and other response actions as recommended by the relevant authorities. As the situation is brought under control and stabilized, the relevant authorities will shift the emergency response efforts to actions aimed at enabling the termination of the emergency and preparation for the resumption of normal living conditions for affected populations. This includes preparation for the resumption of normal social and economic activity.

5.16. Paragraph 5.73 of GSR Part 7 [1] states:

> "Arrangements shall be made to explain to the public any changes in the protective actions and other response actions recommended in the State and any differences from those recommended in other States".

During the transition phase (see paras 2.11–2.14 of GSG-11 [5]), various emergency response actions that were taken during the emergency response will be adjusted or restrictions that were imposed will be lifted. This will have consequences for affected populations and other interested parties, as well as for their information needs and priorities.

5.17. Paragraph 5.96 of GSR Part 7 [1] states:

> "Arrangements for communication with the public in a nuclear or radiological emergency…shall include arrangements for communication on the reasons for any adjustment of protective actions and other response actions and other arrangements aimed at enabling the termination of the emergency.

This shall include providing the public with information on the need for any continuing protective actions following termination of the emergency and on any necessary modifications to their personal behaviour. Arrangements shall be made, during this period, to closely monitor public opinion and the reaction in the news media in order to ensure that any concerns can be promptly addressed."

5.18. Paragraph 5.97 of GSR Part 7 [1] states:

"The termination of a nuclear or radiological emergency shall be based on a formal decision that is made public and shall include prior consultation with interested parties, as appropriate."

5.19. Paragraph 5.100 of GSR Part 7 [1] states:

"The government shall ensure that, as part of its emergency preparedness, arrangements are in place for the termination of a nuclear or radiological emergency. The arrangements shall take into account that the termination of an emergency might be at different times in different geographical areas. The planning process shall include as appropriate: … (g) Arrangements for continued communication with the public, and for monitoring of public opinion and the reaction in the news media".

5.20. Paragraph 3.20(e) of GSG-11 [5] recommends that a mechanism and the means for continued communication with and consultation of the public and other interested parties, including local communities, during the transition phase should be put in place. This is a specific prerequisite that should be met in order to be able to declare the termination of an emergency.

5.21. The expected changes in priorities and in the needs for public information during the emergency response phase and during the transition phase should be considered in making arrangements for public communication in an emergency. This should include communicating with the public on the decision made by the response organization or other relevant authority to terminate the emergency and to transition to either an existing exposure situation or a planned exposure situation.

5.22. The transition to an existing exposure situation or to a planned exposure situation might occur at different times in different geographical areas or sites (see paras 2.14 and 3.4(a) of GSG-11 [5]). Possible concerns and needs for public information with regard to the termination of the emergency should be taken into account in arrangements for public communication. The concerns of the public

and needs for public information might be different in different geographical areas and sites, and this should also be taken into account.

5.23. Direct public communication and consultation about decisions that could affect the daily lives of the populations concerned for an extended period should be conducted in the transition phase. This public communication should aim to help affected populations to cope with the effects of stress and should provide the public with reassurance.

5.24. Affected populations should be assisted by the establishment of public support centres, as recommended in paras 4.101(c) and 4.178 of GSG-11 [5]. Risk perception and its social context (see paras 2.39–2.41) should be taken into account in public communication.

5.25. Paragraph 3.18 of GSG-11 [5] states:

> "Before the termination of the emergency, the following should be discussed with and communicated to the public and other interested parties, as appropriate:
>
> (a) The basis and rationale for the termination of the emergency and an overview of the actions taken and the restrictions imposed;
> (b) The need to adjust imposed restrictions, to continue protective actions or to introduce new protective actions, as well as the expected duration of these actions and restrictions;
> (c) Any necessary modifications to people's personal behaviours and habits;
> (d) Options for the implementation of self-help actions[25], as appropriate;
> (e) The need for continued environmental monitoring and source monitoring after the termination of the emergency;
> (f) The need for continued efforts to restore services and workplaces;
> (g) Radiological health hazards associated with the new exposure situation.
>
> "[25] Examples of self-help actions include, but are not limited to, avoiding prolonged visits to certain areas, changing farming practices and land use, and reducing the consumption of certain foods."

5.26. Paragraph 4.9 of GSG-11 [5] states:

> "In the transition phase, the necessary transfer of responsibilities to different jurisdictions or different authorities (or to different units within an organization) should be carried out in a formal, coordinated and fully transparent manner and should be communicated to all interested parties."

This transfer of responsibilities in various areas is to allow for long term management of the situation (see paras 4.10–4.15 of GSG-11 [5]). In this context, any transfer of authority and responsibilities for public communication in the transition phase should be considered at the preparedness stage. Any such transfer of responsibilities should be unambiguously addressed in the public communication programme and in the public communication plan.

5.27. Communication with and consultation of interested parties in the transition phase should be increased in comparison with the emergency response phase (see para. 5.99 of GSR Part 7 [1] and paras 4.38 and 4.197–4.207 of GSG-11 [5]). The affected population should be encouraged to participate actively in communication and consultation, enabled by the emergency response organization, during the transition phase. This participation will help to maintain public trust when emergency response actions are to be adjusted and when restrictions that were imposed (e.g. food restrictions) are to be lifted.

5.28. As stated in para. 4.202 of GSG-11 [5]:

> "Consultation with relevant interested parties should be based on effective communication mechanisms that are founded on transparency, inclusiveness, shared accountability and measures of effectiveness and should allow for feedback to be accommodated in a timely fashion."

5.29. Experience has shown that communication with and consultation of interested parties that is late or is at a low level is likely to have long term consequences for relations with interested parties in the recovery phase. The following should be addressed in the public communication plan to enable effective public communication in the transition phase:

(a) The public and other interested parties should be regularly informed about ongoing actions for protection of the public and protection of the environment.
(b) Programmes of public information on radiation induced health effects, including the concept of risk, should be introduced in cooperation with

educational institutions. These programmes should aim to improve understanding of the emergency response actions taken in the transition phase. The programmes should be continued after the termination of the emergency.

(c) Organizations should anticipate that public concerns about other aspects of the emergency response, such as waste management and waste disposal (see Requirement 15 of GSR Part 7 [1]), may grow as progress is made towards the termination of an emergency.

Appendix

EXAMPLE SYSTEM FOR PUTTING RADIOLOGICAL HEALTH HAZARDS IN PERSPECTIVE IN A NUCLEAR OR RADIOLOGICAL EMERGENCY

A.1. The system in this Appendix for putting radiological health hazards in perspective has been derived on the basis of the findings of the UNSCEAR 2012 Report [15] and the generic criteria established in GSR Part 7 [1] and GSG-2 [4] for taking protective actions and other response actions in a nuclear or radiological emergency.

A.2. The system should be considered by the relevant authorities when developing a national system for putting radiological hazards in perspective, as required by paras 5.72, 5.83 and 5.96 of GSR Part 7 [1]. In considering this system, the national context should also be taken into account.

A.3. The system comprises three levels as follows:

— Dangerous to health;
— Possible health effects resulting from radiation exposure;
— No observable health effects resulting from radiation exposure.

Each level is explained in detail in paras A.4–A.15 and is colour coded (see Fig. 1).

DANGEROUS TO HEALTH

A.4. 'Dangerous to health' corresponds to situations in which there is a possibility to develop in an individual a serious injury or physical harm that is life threatening or that could reduce the quality of life as being due to radiation exposure.

A.5. 'Dangerous to health' corresponds to doses exceeding the generic criteria in table II.1 of GSR Part 7 [1], at which health effects in an individual could be scientifically attributed to radiation exposure. If such doses are projected, protective actions and other response actions should be taken under any circumstances to protect individuals.

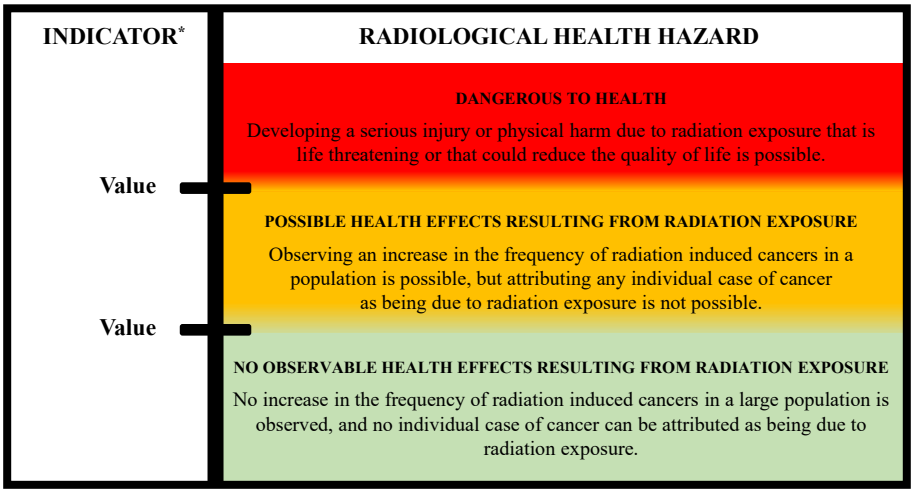

*FIG. 1. System for putting radiological health hazards in perspective. *Examples include dose, dose rate or any other indicator.*

A.6. If such doses are received, medical examination and screening should be provided and should be followed by medical treatment, as necessary.

POSSIBLE HEALTH EFFECTS RESULTING FROM RADIATION EXPOSURE

A.7. 'Possible health effects resulting from radiation exposure' corresponds to situations in which there is a small possibility that epidemiological studies would reveal an increase due to radiation exposure in the frequency of occurrence of specific cancers in a large population. However, attributing any individual case of cancer as being due to radiation exposure will not be possible.

A.8. 'Possible health effects resulting from radiation exposure' corresponds to doses exceeding the generic criteria in table II.2 of GSR Part 7 [1], at which an increase in the frequency of occurrence of specific cancers in a population could be scientifically attributed to radiation exposure by means of epidemiological analysis.

A.9. If such doses are projected, protective actions and other response actions should be taken as a precaution to protect individuals.

A.10. If such doses are received, longer term medical follow-up should be provided for the early detection and effective treatment of specific radiation induced health effects.

A.11. Care should be taken in public communication when projections of numbers of health effects among a population are provided in such cases. The meaning of the numbers should be clearly explained and should be clearly related to the objective of the longer term medical follow-up.

NO OBSERVABLE HEALTH EFFECTS RESULTING FROM RADIATION EXPOSURE

A.12. 'No observable health effects resulting from radiation exposure' corresponds to situations in which there is no possibility that current epidemiological studies would reveal an increase due to radiation exposure in the frequency of occurrence of specific cancers in a large population. Attributing any individual case of cancer as being due to radiation exposure will also not be possible.

A.13. 'No observable health effects resulting from radiation exposure' corresponds to doses of the order of magnitude of doses due to global average background levels of radiation and below the generic criteria provided in tables II.1 and II.2 of GSR Part 7 [1]. If such doses are projected, protective actions and other response actions for protecting individuals against radiological health hazards are not warranted. Taking such actions might be considered, as a precaution, to reduce doses to be as low as reasonably achievable, but only if the actions are justified and optimized.

A.14. If such doses are received, no medical attention in relation to radiation induced health effects is warranted.

A.15. Projections of hypothetical numbers of health effects among a population in such cases, made for whatever reason, should not be used in public communication on radiological health hazards.

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Annex I

EXAMPLE TEMPLATES OF AN INITIAL STATEMENT AND AN INITIAL PRESS RELEASE

INITIAL STATEMENT

I–1. An example of an initial statement, for use if there are media reports or rumours about a situation with no confirmed information available, is given below:

> [Organization] is aware of [report/rumour] regarding [situation] at [location]. At present, [organization] is investigating this matter and will provide more information as it becomes available.

INITIAL PRESS RELEASE

I–2. An example of an initial press release, for use if the organization has been informed about an emergency, incident or event but has not received any details, is given below:

> [Organization] has been informed that [situation] has occurred at [location]. [Organization] has [action taken] and remains in close contact with [operator/point of contact]. [Organization] will provide more information as it becomes available.

Annex II

EXAMPLE OF A PUBLIC INFORMATION SECTION WITHIN A UNIFIED COMMAND AND CONTROL SYSTEM

II–1. Figure II–1 shows an example of an organizational plan for a public information section within a unified command and control system for use in public communication in a nuclear or radiological emergency.

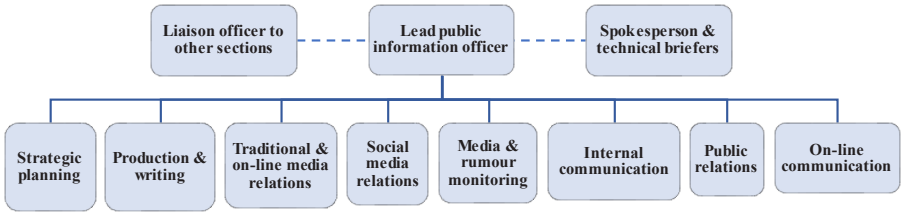

FIG. II–1. Organizational plan for a public information section within a unified command and control system.

Annex III

ADVANTAGES AND DISADVANTAGES OF VARIOUS COMMUNICATION TOOLS

III–1. Table III–1 lists the advantages and disadvantages of various communication tools for use in public communication in a nuclear or radiological emergency.

TABLE III–1. ADVANTAGES AND DISADVANTAGES OF VARIOUS COMMUNICATION TOOLS

Channel of communication	Advantages and disadvantages
One way Press release Emergency web site Newsletter Intranet update Question and answer lists on web sites Text messages and other messaging apps Apps that broadcast real time protective information Announcements on television and radio stations Printed information products Digitally distributed information products (e.g. blogs, infographics, podcasts) Warning sirens and public address systems Live streaming Spokesperson interviews (e.g. in the press or on television and radio stations)	Advantages Scalable Can reach a large group at the same time Credible source of information Gives the possibility to answer questions and clarify subjects Own media afford more space and scope to address complex issues Disadvantages Limited or no opportunity to clarify on request and to have a dialogue Information becomes outdated For media engagement, trained spokespersons with good communication skills are needed

TABLE III–1. ADVANTAGES AND DISADVANTAGES OF VARIOUS COMMUNICATION TOOLS (cont.)

Channel of communication	Advantages and disadvantages
Two way On-line chats Press conferences Briefings for the news media Public meetings Public information centre Answering service for enquiries by telephone, by email and on social media Public visits to facilities	Advantages Credible provider of information Establishes a dialogue with interested parties Gives the possibility to make communication more human Provides the opportunity to explain complex issues Possibility to check which information is getting through and how it is being interpreted May assist in the gathering of real time information from eyewitnesses for raising awareness of the situation and identifying hazards and problems in the field Disadvantages Presence on social media needs to be established before an emergency occurs Might need many staff (e.g. for answering services) Good communication and interaction skills are needed

TABLE III–1. ADVANTAGES AND DISADVANTAGES OF VARIOUS COMMUNICATION TOOLS (cont.)

Channel of communication	Advantages and disadvantages
Interactive media Internal emails to staff and interested parties on mailing lists 'Microblogs': platforms where people share short posts (e.g. Twitter, Weibo) Content communities (platforms that work around specific content that people create and comment on) Forums (on-line discussion platforms) Wikis (web pages people create and edit content together) Blogs (on-line logs or journals) Individual web sites that allow people to share content and communicate	Advantages Information sharing between communication staff, technical staff and other staff Creates a dialogue with interested parties Gives the possibility to offer more empathetic communication Offers an opportunity to connect people with questions to people with answers Offers an opportunity to check which information is getting through and how it is being interpreted Disadvantages Social media need to be adapted before an emergency occurs The platform determines the pace of communication Might need many staff (e.g. to answer questions)

Annex IV

LIST OF USEFUL BACKGROUND INFORMATIONAL MATERIAL

IV–1. This annex lists the background informational material to support the public communication response (see paras 3.151–3.154) that is to be produced at the preparedness stage.

BASICS OF RADIOACTIVITY AND RADIATION

IV–2. Background informational material is to be produced on the following basics of radioactivity and radiation:

(a) Radioactivity, radioactive material and units (and common multiples);
(b) Types of radiation;
(c) Radiation dose, dose rate and units (and common multiples);
(d) Natural background radiation;
(e) Putting radiation doses in perspective (comparative chart showing doses from different radiation sources);
(f) Radiation monitoring data;
(g) Properties of common radionuclides (^{241}Am, ^{137}Cs, ^{252}Cf, ^{60}Co, ^{131}I, ^{192}Ir, ^{238}Pu, ^{210}Po, ^{226}Ra, ^{75}Se, ^{90}Sr, ^{235}U) and uranium in general.

APPLICATIONS AND USES OF IONIZING RADIATION, NUCLEAR MATERIAL AND OTHER RADIOACTIVE MATERIAL

IV–3. Background informational material is to be produced on the following applications and uses of ionizing radiation, nuclear material and other radioactive material:

(a) Nuclear power;
(b) Industrial uses;
(c) Medical uses;
(d) Irradiation facilities;
(e) Research reactors;
(f) Accelerators.

NUCLEAR POWER PLANTS

IV–4. Background informational material is to be produced on the following topics relating to nuclear power plants:

(a) How does a nuclear reactor work?
(b) How does fission work?
(c) Reactor types:
    — Pressurized water reactor;
    — Boiling water reactor;
    — Pressurized heavy water reactor;
    — Light water graphite reactor;
    — Fast breeder reactor;
    — Gas cooled reactor;
    — Nuclear marine propulsion reactors.
(d) Key safety systems (containment and cooling).
(e) Redundancy and diversity (defence in depth).
(f) Different accident scenarios and fundamentals of accident progression:
    — Design basis accidents and design extension conditions;
    — Hydrogen ignition events;
    — Meltdown;
    — Loss of coolant accident.
(g) Is nuclear power safe, and is it safe to live near a nuclear power plant?

NUCLEAR FUEL CYCLE

IV–5. Background informational material is to be produced on the following topics relating to the nuclear fuel cycle:

(a) Uranium milling and conversion (chemical hazards);
(b) Fuel enrichment;
(c) Fuel fabrication;
(d) Spent fuel;
(e) Storage of fuel;
(f) Dry storage of fuel;
(g) Wet storage of fuel;
(h) Reprocessing;
(i) Transport.

APPROACHES TO WASTE MANAGEMENT AND DECOMMISSIONING

IV–6. Background informational material is to be produced on approaches to waste management and decommissioning.

PAST RADIOLOGICAL ACCIDENTS

IV–7. Background informational material is to be produced on past radiological accidents, such as the following:

(a) Chernobyl [IV–1 to IV–4];
(b) Three Mile Island [IV–5];
(c) Fukushima Daiichi [IV–6];
(d) Windscale;
(e) Goiânia [IV–7];
(f) Tokaimura [IV–8].

NUCLEAR SECURITY

IV–8. Background informational material is to be produced on the following topics relating to nuclear security:

(a) National laws and requirements;
(b) Definition of a nuclear security event;
(c) International guidance.

EMERGENCY MANAGEMENT

IV–9. Background informational material is to be produced on the following topics relating to emergency management:

(a) Roles and qualifications of first responders and decision makers;
(b) Emergency classification;
(c) International standards and national laws;
(d) Where to find information;
(e) Why emergency exercises are held.

RADIATION PROTECTION

IV–10. Background informational material is to be produced on the following topics relating to radiation protection:

(a) How to protect oneself and others in an emergency;
(b) Time, distance and shielding;
(c) Exposure pathways;
(d) The national radiation protection framework;
(e) How to recognize a radiation source;
(f) Radiation induced health effects;
(g) Iodine thyroid blocking;
(h) How to protect the food chain;
(i) Taking unwarranted actions[1].

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[1] Unwarranted actions include: actions that interfere with the prompt implementation of protective actions, such as self-evacuation from both within and outside areas from which evacuation is ordered; actions that unnecessarily burden the health care system; actions that shun or otherwise discriminate against people or products from an area affected by a nuclear or radiological emergency; elective terminations of pregnancy that are not radiologically informed; and cancellations of commercial flights that are not radiologically informed.

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Annex V

ATTRIBUTION OF HEALTH EFFECTS TO RADIATION EXPOSURE AND PROSPECTIVE INFERENCE OF RISKS

V–1. The United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) reports to the General Assembly of the United Nations on the sources, effects and risks of ionizing radiation. General Assembly resolution 62/100 [V–1] recalls the intention of UNSCEAR "to clarify further the assessment of potential harm owing to chronic low-level exposures among large populations and also the attributability of health effects" and encourages UNSCEAR "to submit a report on that issue at its earliest convenience". In this context, 'attributability' refers to the ascribing of an outcome — in particular, a health effect — to radiation exposure. Such an outcome might be the occurrence of a health effect in an individual or a change in the frequency of occurrence of health effects in a population or a group.

V–2. The UNSCEAR report was finalized in 2012 [V–2], and the main conclusions were as follows:

(a) In the case of exposure to high doses and high dose rates, deterministic effects[1] in an individual could be unequivocally attributed to radiation exposure if possible alternative causes could be eliminated.
(b) Stochastic effects[2] in an individual cannot be unequivocally attributed to radiation exposure, because radiation exposure is not the only possible cause and there are at present no generally available biomarkers that are specific to radiation exposure.
(c) An increased incidence of stochastic effects in a population could be attributed to radiation exposure through epidemiological analysis, provided that the increased incidence was sufficient to overcome inherent statistical uncertainties.

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[1] A deterministic health effect of radiation is a radiation induced health effect for which generally a threshold level of dose exists above which the severity of the effect is greater for a higher dose [V–3].

[2] A stochastic health effect of radiation is a radiation induced health effect, the probability of occurrence of which is greater for a higher radiation dose and the severity of which (if it occurs) is independent of dose [V–3].

(d) An increase in the incidence of hereditary effects in human populations cannot at present be attributed to radiation exposure (although demonstrated in animal studies).
(e) Increases in the incidence of health effects in populations cannot be attributed reliably to chronic exposure to radiation at levels that are typical of the global average background levels of radiation. This is because of the uncertainties associated with the assessment of risks at low doses, the current absence of radiation specific biomarkers for radiation induced health effects and the insufficient statistical power of epidemiological studies.

V–3. UNSCEAR [V–2] "does not recommend multiplying very low doses by large numbers of individuals to estimate numbers of radiation-induced health effects within a population exposed to incremental doses at levels equivalent to or lower than natural background levels". Furthermore, UNSCEAR [V–2]:

> "notes that public health bodies need to allocate resources appropriately, and that this may involve making projections of numbers of health effects for comparative purposes. This method, though based upon reasonable but untestable assumptions, could be useful for such purposes provided that it were applied consistently, the uncertainties in the assessments were taken fully into account, and it were not inferred that the projected health effects were other than notional."

V–4. The UNSCEAR findings in paras V–2 and V–3 are crucial in respect of communications relating to radiation induced health effects. Thus, although health effects can be attributed to high levels of radiation exposure, decision makers, the public and other interested parties need to be informed that relatively low level radiation exposure would not cause health effects that can be unequivocally attributed to radiation.

V–5. The results from the calculations described in para. V–3 can be used for justifying and optimizing protection and safety. However, it is incorrect and unwarranted to infer the number of health effects in an affected population from such calculations. The use of such calculations in public communication during or following past emergencies resulted in inappropriate projections being made of potential fatalities among large numbers of people exposed to radiation at relatively low levels. This gave rise to widespread anxiety and other harmful non-radiological consequences and the impression that the impact of the emergency was far more severe than the actual impact. Technical experts, those responsible for public communication, and decision makers need to be aware that such

calculations are not to be used in public communication. An example system for putting radiological health hazards in perspective is provided in the Appendix.

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