IAEA Report on

Enhancing Transparency and Communication Effectiveness in the Event of a Nuclear or Radiological Emergency

International Experts Meeting
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IAEA REPORT ON ENHANCING TRANSPARENCY AND COMMUNICATION EFFECTIVENESS IN THE EVENT OF A NUCLEAR OR RADIOLOGICAL EMERGENCY

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FOREWORD

by Denis Flory
Deputy Director General
Department of Nuclear Safety and Security

In response to the accident at the Fukushima Daiichi nuclear power plant, IAEA Member States unanimously adopted the Action Plan on Nuclear Safety. Under this Action Plan, the IAEA Secretariat was asked to organize International Experts Meetings to analyse all relevant technical aspects and learn the lessons from the accident. The International Experts Meetings brought together leading experts from areas such as research, industry, regulatory control and safety assessment. These meetings have made it possible for experts to share the lessons learned from the accident and identify relevant best practices, and to ensure that both are widely disseminated.

This report on Enhancing Transparency and Communication Effectiveness in the Event of a Nuclear or Radiological Emergency is part of a series of reports covering all the topics dealt with in the International Experts Meetings. The reports draw on information provided in the meetings as well as on insights from other relevant IAEA activities and missions. It is possible that additional information and analysis related to the accident may become available in the future.

I am grateful to the participants of all the International Experts Meetings and to the members of the International Nuclear Safety Group (INSAG) for their valuable input.

I hope that this report will serve as a valuable reference for governments, technical experts, nuclear operators, the media and the general public, and that it will help strengthen nuclear safety.

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INSAG PERSPECTIVE

This report provides an excellent review of the various communications issues that can surround a nuclear or radiological emergency. It draws extensively on international expertise and experience in the discussion of a very complex subject that involves many challenges as well as opportunities.

A robust communications strategy for nuclear and radiological emergencies should address three main requirements. First, as the IAEA report notes, there are several stakeholders involved in communications, including governments, regulators, operators, international agencies, designers, technical organizations, independent nuclear experts and of course the public. The roles, responsibilities and coordination of the various stakeholders have to be clearly defined. Second, the lessons from the accident at the Fukushima Daiichi nuclear power plant (the Fukushima Daiichi accident) and from previous incidents suggest that the information used in communications needs to be transparent, timely, objective, factual, relevant, accurate, clear and credible. Mechanisms have to be defined for the rapid development and clearance of information that has these characteristics. Third, processes need to be established that result in regular and efficient dissemination of information to both national and international stakeholders.

In general, there are two types of information that need to be communicated in an emergency: lay information for the public and non-nuclear experts, and technical information for the national and international nuclear community, including international agencies, regulators and individual nuclear experts. While much of the focus should understandably be on public communications, an overall communications strategy should include formal provisions for the rapid dissemination of technical information as well. The international expert community can assist greatly in the communication of factual information in their local communities, because it is natural for people to seek local expert opinion in their own language from domestic institutions with which they are familiar.

One of the key lessons is that communications with the public need to be sensitive to the psychological impacts of social and economic upheaval, in addition to safety. While the health effects of the radiation released from the Fukushima Daiichi accident will likely turn out to be small, the psychological and economic impacts were severe and will persist long after the emergency. Communications need to be provided that reflect an awareness of the full impact of an accident.

The Fukushima Daiichi accident has resulted in considerable enthusiasm for the adoption of new communication initiatives that are comprehensive and effective. There is concern that it may prove difficult to sustain these initiatives over long periods, particularly if the emergency communications plans are rarely, if ever, invoked. Consideration should be given to establishing periodic formal

international review mechanisms and exercises to ensure that the communications plans are maintained and effective.

The INSAG report entitled Stakeholder Involvement in Nuclear Issues (INSAG-20)[1], asserts that all stakeholders should be provided with an opportunity for full and effective participation in nuclear decisions. We agree strongly with this report's emphasis on using regular communications to build local relationships and trust during normal operations of nuclear facilities, thus establishing and maintaining credible communications channels for use in an emergency. An added benefit is that the communications principles for emergency situations are the same as for normal operations, so invoking them during an emergency would then be a familiar and well rehearsed exercise.

The role of international agencies is critical and should be included in national communication strategies. Domestic authorities should leverage the existing infrastructure to deal with international communications. For example, international agencies such as the IAEA and OECD Nuclear Energy Agency have experience with many different languages and cultures, established communications processes and rapid access to resident and international expertise. Their role should be recognized and included in national communication strategies.

In conclusion, we suggest that there are two initial priorities that follow from this report:

(1) Member States should develop emergency communications plans that clearly define the roles and responsibilities of the national stakeholders involved in communications and ensure that the plans are maintained. The requirements for both domestic and international communications should be addressed, as well as the requirements for different types of information for the general public and for technical experts. The IAEA should take a lead role in assisting Member States, particularly new entrant countries, in adopting the best international practices and lessons learned.
(2) The plans should be maintained and enhanced by carrying out periodic reviews or exercises (facilitated by the IAEA) and by using regular and frequent communications during normal operations of nuclear facilities to build local relationships and trust.

[1] INTERNATIONAL NUCLEAR SAFETY GROUP, Stakeholder Involvement in Nuclear Issues, INSAG-20, IAEA, Vienna (2006).

1. INTRODUCTION

Following the accident at TEPCO's Fukushima Daiichi nuclear power plant (the Fukushima Daiichi accident), the IAEA Director General convened the IAEA Ministerial Conference on Nuclear Safety in June 2011 to direct the process of learning and acting upon lessons to strengthen nuclear safety, emergency preparedness and radiation protection of people and the environment worldwide. Subsequently, the Conference adopted a Ministerial Declaration on Nuclear Safety, which requested the Director General to prepare a draft Action Plan.[2] The draft Action Plan on Nuclear Safety (the Action Plan) was adopted by the Board of Governors at its September 2011 meeting.[3] On 22 September 2011, the IAEA General Conference unanimously endorsed the Action Plan, the purpose of which is to define a programme of work to strengthen the global nuclear safety framework.

The Action Plan includes 12 main actions; one of the actions is focused on communication and information dissemination, and includes six sub-actions, one of which mandates the IAEA Secretariat to "organize international experts meetings to analyse all relevant technical aspects and learn the lessons from the Fukushima Daiichi nuclear power station accident".[4]

The International Experts Meeting (IEM) on Enhancing Transparency and Communication Effectiveness in the Event of a Nuclear or Radiological Emergency was held from 18 to 20 June 2012, at IAEA Headquarters in Vienna, Austria. The IEM was convened to identify and analyse relevant aspects of enhancing transparency and effectiveness in communications during and after a nuclear or radiological emergency, in the light of the Fukushima Daiichi accident, and to identify lessons learned and best practices for improving the dissemination of information.

This IEM report provides lessons learned in communication during a nuclear emergency, including the Fukushima Daiichi accident, and offers practice-tested recommendations to help strengthen Member States' effective communication capabilities.

The three day IEM gathered approximately 165 experts from 52 Member States and 16 international organizations, as well as media representatives. The

[2] Declaration by the IAEA Ministerial Conference on Nuclear Safety in Vienna on 20 June 2011, INFCIRC/821, IAEA, Vienna (2011), para. 23.

[3] Draft IAEA Action Plan on Nuclear Safety, Report by the Director General, GOV/2011/59-GC(55)/14, IAEA, Vienna (2011).

[4] Ibid., p. 5.

IEM featured 37 expert presentations from keynote speakers and panellists, and provided an open forum for discussion, where the participants shared their experience and identified lessons learned in communication and information dissemination during and after nuclear accidents and/or radiological emergencies. The participants related the means utilized during the emergency period that improved transparency in public communications during a nuclear or radiological emergency, as well as best practices in the use of communications media to ensure the dissemination of timely, factually correct, objective and easily understandable information in emergency situations.

The IEM was organized into four working sessions, including keynote addresses, presentations and discussion periods, which considered the following topics: challenges in communication during the Fukushima nuclear emergency; case studies in national regulator and affected operator experiences during nuclear and radiological emergencies; case studies in enhancing the inter-agency response in support of effective public communication during a nuclear or radiological emergency; identifying best practices in effectively addressing public concerns through transparent communication during major emergencies; and identifying best practices in the delivery of easily understandable information during emergencies of major public concern by national governmental authorities and disaster response and humanitarian relief organizations. The experts discussed the measures that ensured enhanced transparency and effective public communications in emergencies, as well as improved dissemination of information during and after a nuclear or radiological emergency. The challenges of delivering easily understandable information during major emergencies and of communicating with a global public via traditional, electronic and social media were also discussed. Each of the working sessions was summarized and a Chairperson's Summary was produced (see Annex A).

1.1. OBJECTIVE

This report provides an overview of the communications guidance derived from the existing relevant documents, as well as the best practices identified by recognized crisis communications experts from international organizations, nuclear regulatory authorities, nuclear operators, technical support organizations and the media as their contribution to this IEM. The views, advice and assessments of these experts form the core of this report. In addition, the report also describes activities of the IAEA Secretariat directed at enhancing transparency and communications effectiveness and information dissemination in the case of a nuclear or radiological emergency and draws upon the relevant

guidance derived from IAEA Safety Standards Series No. GS-R-2, Preparedness and Response for a Nuclear or Radiological Emergency[5].

By bringing together the lessons learned to date in communicating effectively with the media and the public in a nuclear or radiological emergency, and by making them available to Member States, this report is expected to contribute to further strengthening nuclear safety and enhancing public confidence in the peaceful uses of nuclear energy.

The IEM sought to provide views and share best practices in the field to help to improve public communication during a nuclear accident in order to ensure that people everywhere receive credible, actionable information that will allow them to understand the health and environmental effects of such an accident and to be able to make informed choices on that basis.

The IEM report is expected to serve as a reference for the concerned government officials, technical experts, nuclear operators, diplomats, media and the general public. It is also expected to contribute to the ongoing efforts to assist Member States in strengthening nuclear safety worldwide. The report also constitutes an integral part of the implementation of the Action Plan on Nuclear Safety by the IAEA Secretariat.

2. LESSONS LEARNED IN EFFECTIVE AND TRANSPARENT COMMUNICATION DURING A NUCLEAR OR RADIOLOGICAL EMERGENCY

Overview: Effective and transparent communications during a nuclear or radiological emergency result from continuous engagement with the public and media prior to an emergency, as well as from a well prepared process during an emergency. The ability of communicators to adapt to the setting within which this communication occurs is one of several factors that determine communications success. Contemporary emergency communication occurs in a globalized media

[5] FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL LABOUR ORGANIZATION, OECD NUCLEAR ENERGY AGENCY, PAN AMERICAN HEALTH ORGANIZATION, UNITED NATIONS OFFICE FOR THE CO-ORDINATION OF HUMANITARIAN AFFAIRS, WORLD HEALTH ORGANIZATION, Preparedness and Response for a Nuclear or Radiological Emergency, IAEA Safety Standards Series No. GS-R-2, IAEA, Vienna (2002).

environment, where journalists, working in traditional and new media, and members of the public, using interactive media to self-publish content accessible to a broad audience, are exchanging information in a fast-paced, 24 hour dialogue. The audience is well informed and articulate; communication by anyone anywhere can become communication everywhere, often within minutes of publication, if the content is sufficiently interesting or relevant. Under these circumstances, the primary challenge for communicators is to obtain, in a timely manner, sufficient technical information and to accurately translate it into messages that are easily understood by the general public in order to ensure that the media and the public acquire the information they need. The experience of communicators during the Fukushima Daiichi accident demonstrates that when this dialogue is sustained effectively, it can strengthen public trust in the nuclear regulatory authorities and operators alike. This positive outcome is particularly relevant when emergency communications begin to serve increasingly as reputational communications the longer the emergency lasts. The public and media's perception of the organizations that are responding to an emergency is the second key determinant of the success of communications. Not only do communicators need to transmit technical, safety related information, but equally important, they must be able to overcome public mistrust, which depends upon maintaining the public's perception of the organization as a competent, open, transparent and independent authority. The greater the trust the public extends to the staff and agencies managing an emergency, the less anxiety they will experience. If the public's trust in these staff and agencies is lost, public anxiety will increase. Any action or communication that damages trust, such as delayed, withheld or misleading information, will raise public apprehension and influence public well-being in an emergency. There is an asymmetry in achieving and losing trust — it is difficult to achieve it, but very easy to lose it.

2.1. EMERGENCY PREPAREDNESS[6]

When developing and planning emergency management, a public communications plan for a nuclear or radiological emergency needs to be developed and integrated into the overall emergency planning and arrangements for organizations at the facility, local, national, regional and international levels. The public communications plan will identify roles and responsibilities for

[6] See: INTERNATIONAL ATOMIC ENERGY AGENCY, Communication with the Public in a Nuclear or Radiological Emergency, EPR-Public Communications 2012, IAEA, Vienna (2012).

different actors in communication to the public, as well as in the collection and dissemination of information. Procedures and checklists give specific instructions to the individuals assigned to fulfil the various roles and to undertake the specific public communications activities. Plans and procedures of the organizations, as well as a national response plan and procedures, need to be in place to coordinate public communications activities with regional and/or local authorities before an emergency occurs. While information may be provided to the public from these different levels, it is vital to the credibility of the response that the information itself be consistent. The public communications plans need to also include specific mechanisms for coordination of information among all levels, especially the local, national, regional and international levels.[7]

Local authorities are expected to plan their response to any likely emergency, including the need to evacuate in the event of a nuclear or radiological emergency. These plans need to be coordinated with other levels of government (national authorities). This will help to avoid contradictory messages and misinformation between national organizations involved in the response. The response structure, including the roles and responsibilities of the different organizations involved, needs to be planned in advance and reflected in all organizational and national response plans for public information.[7]

A public information officer (PIO) or public information team needs to identify possible types of nuclear or radiological emergency for which public communications will be necessary. The IAEA has identified five threat categories for emergency planning, which are listed in IAEA Safety Standards Series No. GS-R-2. Planning in public communications should cover those threat categories taken into account in the national planning process. Emergencies may occur at nuclear power or research reactors, or may result from the misuse of industrial or medical radioactive sources from uncontrolled (abandoned, lost, stolen or found) radioactive sources, malicious threats or acts, or transport emergencies. Many communication principles are applicable to all types of emergency, but in the case of deliberate acts, for example, there are special considerations, which may restrict the amount of information that can be made public.[7]

As part of the preparedness in the area of public communications, it is important to be aware of the different types of nuclear and radiological emergency that may occur. Whether radioactivity is released as a result of an accident, natural disaster or malicious act, or if there is a radiological emergency due to a lost or orphan radioactive source, the need to communicate with the public and the media is a strategic priority for many Member States.

[7] See footnote 6.

Both the demand for public information during an emergency and its associated costs are often underestimated. Resources will vary according to the existing level of public communications arrangements undertaken by a Member State. Those without such programmes already in place may need to dedicate additional financial and human resources to develop the policies, procedures, training, information products and web site that will be required to respond to an emergency.

In the event of a nuclear or radiological emergency, a prepared and informed public is much more likely to understand the messages being provided by the authorities, which will help in the coordination of the emergency response and in the efficient implementation of protective actions. However, public anxiety during a nuclear or radiological emergency may result in public reluctance to fully trust and follow the information issued by the authorities. In such cases, the public may be more prone to seek and even rely on information from non-official sources, which may be not entirely trustworthy. To address the risk of loss of public trust in the institutions responsible for ensuring their safety, an in-depth and sustained dialogue between the public and the relevant organizations needs to be established by the authorities. Such a dialogue would ensure accessible and trusted channels of communication, and provide for strengthening confidence in the authorities.

A specialized communications training, drills and exercise programme needs to be established to ensure that public information personnel are prepared to respond effectively in the event of a nuclear or radiological emergency. This training is to be offered to all PIOs on an annual basis, as well as to non-plant personnel and to the news media. The overall objective of PIO training is to prepare and maintain qualified personnel for all positions in the public information team. The training is commensurate with the individual's emergency response assignment and should be held annually for all staff. Initial training on the radiation emergency communications plan should be conducted for new staff. Annual training may need to also include participation in a drill or exercise.

In general, Member States using nuclear power or other significant sources of radiation will already have an organization responsible for public communications activities, which could take on the function of coordinating with all sources of official information during an emergency to ensure the provision of consistent, accurate and timely information to the public and media. For all Member States, this function needs to be developed as part of the overall emergency response plan. In an emergency, there will be heavy demand for public communications; therefore, it is important to plan how to coordinate and deliver key activities on a 24 hour basis, potentially over many days or even weeks.

To ensure the provision of consistent information, one or several spokespeople need to be designated and trained prior to an emergency. A spokesperson is an official designated to speak to the media with support from the PIO/team, which coordinates all public communications responses (in the event that multiple spokespeople are required) to ensure that no conflicting or contradictory messages occur. In an emergency, the spokesperson is often a senior official involved in managing the response. Following the Fukushima Daiichi accident, some of the IEM participants recommended that the chief spokesperson should concentrate solely on communications issues and have no other emergency response duties. Selection of the spokesperson is based primarily on three factors: communication skills, technical expertise and level of authority.[8] To be credible, the spokesperson must be an expert in the area and hold a position with a level of authority appropriate to the matter about which he or she will be speaking. Ongoing training in empathetic, plain language communication is essential, to ensure that the audience perceives the spokespeople and their messages as relevant, beneficial and credible. Guidance or coaching to prepare the spokesperson for specific interviews or press briefings should be provided by the PIO/team. The spokesperson is to work with the PIO to develop appropriate plain language explanations and analogies to explain technical matters. It was also the understanding in the IEM that all persons speaking to the media during a nuclear or radiological emergency will have been provided with media training on a regular and consistent basis. All spokespeople and technical experts need to be well prepared for potentially challenging and stressful interactions with the media during a nuclear or radiological emergency.

[8] See EPR-Public Communications 2012, p. 16. EPR-Public Communications 2012 explains and elaborates on the requirements in IAEA Safety Standards Series No. GS-R-2, and elaborates on information in the following publications: FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL LABOUR OFFICE, PAN AMERICAN HEALTH ORGANIZATION, UNITED NATIONS OFFICE FOR THE COORDINATION OF HUMANITARIAN AFFAIRS, WORLD HEALTH ORGANIZATION, Arrangements for Preparedness for a Nuclear or Radiological Emergency, IAEA Safety Standards Series No. GS-G-2.1, IAEA, Vienna (2007); and INTERNATIONAL ATOMIC ENERGY AGENCY, Method for Developing Arrangements for Response to a Nuclear or Radiological Emergency, EPR-Method 2003, IAEA, Vienna (2003).

Preparing templates in advance for press releases will facilitate the development and distribution of messages in an emergency. The IAEA provides examples of templates for different types of emergency in its publications EPR-Public Communications 2012[9] and EPR-First Responders 2006[10].

For effective communication in an emergency, the identification of all possible audiences needs to be made in the preparedness phase. Each emergency will have different audiences, and these may even change during an emergency. Audiences can be directly or indirectly involved in the emergency. Some of them may be more clearly and directly affected by the potential risks and consequently are dependent on the information communicated. Others may not actually be exposed to radiation but may claim to be interested or affected by the overall situation. While only those exposed to radiation will be at real risk, others may be worried that they are also at risk. Quickly communicating appropriate information to these two groups should be a priority. Often, the greatest drain on emergency medical resources is the 'worried well' — people who seek medical attention when they have not been exposed or injured. To reduce this likelihood, information about who is and who is not at risk must be clearly communicated. It is highly recommended to engage audiences in the preparedness phase. PIOs should concentrate on local relationships and interactions in order to understand the true drivers of trust, to build it and maintain it.

Planning should not only focus on communication means (i.e. on how to communicate the message), but should also take into account all the demands connected with communication flows at the following levels:

(a) Communication within a response organization;
(b) Communication between organizations involved in a response;
(c) Communication from response organizations to the public;
(d) Communication from the public to response organizations (feedback).

When preparing to communicate about nuclear or radiological emergencies, it is important to note that risk and acceptability mean different things to different individuals. There is a gap between public and expert understandings of risk. This variation in risk perception is important to understand, because if communicators

[9] INTERNATIONAL ATOMIC ENERGY AGENCY, Communication with the Public in a Nuclear or Radiological Emergency, EPR-Public Communications 2012, IAEA, Vienna (2012).

[10] INTERNATIONAL ASSOCIATION OF FIRE AND RESCUE SERVICES, INTERNATIONAL ATOMIC ENERGY AGENCY, PAN AMERICAN HEALTH ORGANIZATION, WORLD HEALTH ORGANIZATION, Manual for First Responders to a Radiological Emergency, EPR-First Responders 2006, IAEA, Vienna (2006).

do not take into account differences between expert and public perceptions of risk, this may reduce the success of risk communication. Risk communication is any combination of actions, words and other interactions that incorporates and respects the perceptions of the information recipients. It is intended to help people make more informed decisions about threats to their health and safety. Experts define risk in terms of cause and effect relationships and attempt to quantify the amount of harm that can result from taking part in a given activity. When members of the public decide on whether or not they consider a risk acceptable, they take account of several qualitative issues. In this way it is possible for low probability 'real risks' to be converted into 'perceived risks' with an apparent high probability during the process of someone forming his or her own risk perception.

2.2. EMERGENCY COMMUNICATIONS

Emergency communications are organized at the international level under the Joint Radiation Emergency Management Plan of the International Organizations (JPLAN)[11]. Each international organization has a spokesperson, and there are arrangements to ensure a coordinated 'one voice' message. At the national level, States are advised to identify a national coordinating authority in emergency preparedness and response. The national coordinating authority should coordinate the allocation of responsibilities, including in public communications, among the different response organizations. This allocation of responsibilities should be elaborated in the emergency plan.

In an emergency, the PIO is expected to function under the Incident Commander (IC) within the Incident Command System (ICS) or similar structure for emergency response. The IC will approve information released to the public.

[11] EUROPEAN COMMISSION, EUROPEAN POLICE OFFICE, FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL CRIMINAL POLICE ORGANIZATION, INTERNATIONAL MARITIME ORGANIZATION, OECD NUCLEAR ENERGY AGENCY, PAN AMERICAN HEALTH ORGANIZATION, UNITED NATIONS ENVIRONMENT PROGRAMME, UNITED NATIONS OFFICE FOR THE CO-ORDINATION OF HUMANITARIAN AFFAIRS, UNITED NATIONS OFFICE FOR OUTER SPACE AFFAIRS, WORLD HEALTH ORGANIZATION, WORLD METEOROLOGICAL ORGANIZATION, Joint Radiation Emergency Management Plan of the International Organizations, EPR-JPLAN 2010, IAEA, Vienna (2010).

During an emergency, only authorized spokespeople may make statements to the media. It is essential to ensure that all interview preparation is done under the direction of the IC.

The first communication needs that must be addressed in either a nuclear or a radiological emergency are related to the public's safety, possible exposure to risk and any necessary protective actions to be taken by the public.

Tools to communicate with the public and the media include press releases, periodic press updates, a purpose-built emergency web site, press briefings, social media and a hotline. For written messages, the content (nature of the emergency, statement about the danger, consequences and instructions) and form (understandable, concise and factual) are of crucial importance.

One aspect of information collection deals with rumours in the news media or public domain. Depending on the scale of the emergency, the establishment of a rumour control centre may be necessary. Rumours appear when the public tries to make sense of an ambiguous, uncertain or chaotic situation. Rumours may spread through mass media or the Internet, or in oral communication, and individuals may transmit them to a number of persons. Rumours will spread depending on their attractiveness, the uncertainty of the situation, the availability or lack of information, and the existence of a cohesive social group. With certain strategies, the start of a rumour can be prevented; with others, a rumour's credibility can be lowered or its spread curtailed. Providing clear and transparent information to the public is therefore crucial.

2.3. INTERNATIONAL RESPONSE

The Convention on Early Notification of a Nuclear Accident (the 'Early Notification Convention')[12] and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (the 'Assistance Convention')[13] are prime legal instruments that establish an international framework to facilitate the exchange of information and the prompt provision of assistance in the specific event of a nuclear or radiological emergency, with the aim of minimizing the consequences. The IAEA has specific functions assigned to it under these Conventions, to which a majority of IAEA Member States and a number of international organizations are parties. The arrangements provided are

[12] Convention on Early Notification of a Nuclear Accident, INFCIRC/335, IAEA, Vienna (1986).

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

documented in the Operations Manual for Incident and Emergency Communication (IEComm 2012)[14].

The IAEA regularly convenes the Inter-Agency Committee on Radiological and Nuclear Emergencies (IACRNE), whose purpose is to coordinate the arrangements of the relevant international intergovernmental organizations for preparing for and responding to nuclear or radiological incidents or emergencies. The IACRNE develops, maintains and co-sponsors the JPLAN, which is the framework for coordination of the response activities of relevant international organizations during a nuclear or radiological emergency and for which the IAEA is the main coordinating body. The IAEA's central role under the international framework includes: prompt notification of the emergency to Member States and international organizations; exchange and/or provision of official (authenticated and verified) information to Member States and international organizations; coordination of international assistance, upon the request of the State concerned; and provision and/or coordination of public information that is timely, accurate and appropriate. For public communications purposes, the IAEA will undertake media relations and media monitoring activities as well as distribution of background information on the situation and on its role and activities during the emergency. Public communications activities will be coordinated among the international organizations under the JPLAN.

Any press releases issued by international organizations under the JPLAN will be factual and based on the role and responsibilities of, and actions taken by, the relevant organization. Where the subject matter of the press release involves the competence of more than one organization, the relevant organizations will coordinate, consult with each other and agree, to the extent possible, on the content of any messages for the public. Should this not be possible, each organization will limit its press releases to its own area of competence. Any assisting organization will make every effort to obtain clearance with a requesting State or organization before releasing information to the media/public on the assistance provided in connection with a nuclear or radiological incident or emergency. Copies of any press releases should be provided to the IAEA for posting on the IAEA's emergency web site, or for establishing a hyperlink on the IAEA's emergency web site to the web site of the relevant organization. The IACRNE maintains a list of PIOs in the participating organizations.

Each Member State and international organization party to the Early Notification Convention is required to notify the IAEA of any accident resulting in actual or potential international transboundary release of radioactive materials

[14] INTERNATIONAL ATOMIC ENERGY AGENCY, Operations Manual for Incident and Emergency Communication, EPR-IEComm 2012, IAEA, Vienna (2012).

that could be of radiological significance for another State. Each Member State and international organization must designate and make known to the IAEA Incident and Emergency Centre (IEC) its national 24 hour warning point and competent authorities for notification purposes. The national emergency response plan should also include designation of a national point of contact to the IAEA for public communications matters. This role could be fulfilled by the National Competent Authority for an Emergency Abroad, or a specific contact for media relations may be identified as part of specific response arrangements.

3. LESSONS LEARNED IN MEDIA AND PUBLIC RESPONSES TO EMERGENCIES

Overview: Media and public trust in those responding to an emergency — the international organizations, the national regulatory authorities and the operators — is a vital prerequisite for continuing nuclear power development. In past nuclear emergencies, media and public trust was challenged when insufficient understandable and credible information was made available by some of these institutions. In contrast, those institutions that responded effectively to the public and media demand for actionable information during a nuclear emergency have experienced increased public expressions of trust in their institutions. Understanding both the media's needs in informing the public and the public's response in an emergency is of fundamental importance when planning effective emergency communications. The globalized media pursue news around the clock. Historically, when institutions do not communicate effectively, media distrust and their critical scrutiny of the operator and the authorities intensify. In the absence of dialogue with the authorities, the media then seek other, potentially less well informed and more critical sources. For their part, the public will have difficulty trusting information sources that have not previously made an effort to demystify nuclear matters and radiation, since radiation is poorly understood and widely assumed to represent an uncontrolled risk. If members of the public do not trust the information source and feel they have been exposed to a risk without their knowledge and consent, they will react in anger and fear, leading ultimately to the rejection of the information provided, thus jeopardizing an essential partnership.

3.1. CONSTRUCTING RELATIONS WITH THE MEDIA

Media of all types (i.e. traditional print, broadcast and social media) are essential vehicles for nuclear officials to communicate with the public. The media can be very capable and powerful partners in assuring public safety and in reducing anxiety quickly. Therefore, it was noted in the IEM that it is crucially important for institutions to develop constructive relationships with the media during non-emergency times so that they communicate effectively during a crisis.

Trust in the relevant authorities is an important factor in the effectiveness of communications in an emergency situation. Effective stakeholder involvement, continuous communication and a proven track record of transparency during normal operations are important elements for establishing and maintaining public trust at the onset of an emergency. In normal operations, the public can rely upon communication channels that are routinely utilized by nuclear organizations to give information and receive feedback. These 'routine' channels can be used to provide timely, factual and understandable information during emergency as well as normal situations. Parallel outreach through such channels may complement special communications mechanisms designed for use in an emergency.

The IEM participants identified some key steps to help establish such relationships:

(a) *Routinely monitor all forms of media.* This enables institutions to assess and understand how the public accesses information, what issues concern the public, which media adhere to traditional journalistic principles and which may have an agenda, and which messages appear to resonate with the audience.

(b) *Identify members of the media and log their contact information for future use.* Keeping a well organized database will enable rapid communication when needed.

(c) *Reach out regularly to content producers.* Well informed journalists are far more likely to report accurately on nuclear or radiological emergencies than are individuals who are unfamiliar with these issues. Therefore, institutions are encouraged to conduct regular outreach programmes to educate journalists. These programmes could include briefings with experts to describe the activities of the institution, tours of nuclear facilities, and participation in training and emergency exercises. Because the media are a dynamic business with rapid turnover, such outreach activities must be conducted regularly to ensure that the latest arrivals are always informed. In addition, the audience of outreach activities can be expanded using remote access tools, such as web streaming, video- and tele-conferencing, and other multiplier technologies.

(d) *Provide simple, understandable, non-technical and practical information*. The public needs information that can be utilized immediately should an emergency arise. Easy-to-use information resources will help members of the media to learn about nuclear facilities and activities both during non-emergency times and during emergency situations. These resources could include written material (i.e. fact sheets on facilities, operations and radiation basics) and visual material (i.e. facility photographs and broadcast-quality video segments). Contact information for emergency response authorities, especially the relevant PIOs, is essential. Providing this material — and updating it regularly — will help to ensure that journalists have the latest information in their hands. In addition, there was an understanding reached at the IEM that making official documents publicly available whenever possible, as a measure of transparency in information handling, increases the institution's credibility by demonstrating it to be an honest and credible communicator. Such actions aimed at increasing transparency will be highly valued during emergency situations.

(e) *Develop and utilize specific channels to the media.* Establishing media focused communication channels will allow journalists to know exactly where to access information from an institution. Potential tools include email notification systems, non-advertised web sites and social media outlets.

(f) *Be available.* In order to augment formal outreach programmes, it is useful for PIOs to be easily accessible for members of the media. Such access will help journalists to feel comfortable contacting an institution at their convenience and will build personal, credible relationships between the media and the institution. Public information offices are advised to arrange for some staff to be available at all times via mobile phones and email, and to reliably respond to all queries on a timely basis.

(g) *Establish credibility.* Following basic communication principles during normal operations will help to establish the credibility of an institution. These principles include the following recommendations: to communicate quickly; to provide information in the most transparent manner; to provide accurate information; to say what is known and what is not known; and to provide information in clear and easily understandable language and concepts.

Media training and partnerships with organizations that support the media in understanding complicated science and communicating it to the general public (so-called science media organizations) help to increase the number of journalists

who can report competently and factually on nuclear matters. A fact book for journalists would help reinforce basic concepts.

Whenever possible, it is advised that the media be invited to participate in emergency exercises. When news outlets decline these invitations, they may wish to indicate that they want to maintain their independence from the organizations upon which they report. In response, it is useful to emphasize that training will improve the quality of their reporting and ensure the safety of the personnel undertaking multi-week emergency reporting assignments. Both the national authority and operators are advised to organize regular briefings for the media that cover subjects related to the operation of nuclear power plants in 'non-crisis' situations, the media that cover issues related to nuclear power plants during an emergency, and the media that have an interest in such training.

During an emergency, operators and authorities can expect that the media may seek safe access to an accident site and thus will need to know how to protect themselves, as well as to understand the radiation basics of the situation. In addition to attending to the media's 'on-site' needs, communicators are encouraged to monitor the media and other sources (non-news Internet sites, advocacy groups, other government agencies and social media) for information being reported. This additional 'sensing' helps to assess the effectiveness of communications and media pick-up of emergency related messaging; it can also be used to detect any rumours or false information that may be circulating about the emergency.

3.2. PUBLIC REACTIONS DURING THE FUKUSHIMA DAIICHI ACCIDENT

Psychological aspects of the public's response to a nuclear emergency deserve increased attention, since the audience's perceptions and receptivity are markedly influenced by the emergency communicators' ability to accommodate their messages to the audiences' emotional state.

As was noted in the IEM, recent research indicates that the public predominately employs an 'affective coping' strategy when dealing with emergencies or crises[15] that are characterized by 'low predictability' and 'low controllability'. The Great East Japan Earthquake, the subsequent tsunami and the series of events that caused the Fukushima Daiichi accident are all events

[15] YAN, J., Making sense sensibly in crisis communication: How publics' crisis appraisals influence their negative emotions, coping strategy preferences, and crisis response acceptance, Commun. Res. **37** 4 (2010) 522–552.

whose exact time of occurrence eludes prediction. The subsequent accident was not controllable in the manner of a typical fire or industrial accident. Thus, affective coping, or the search for emotional support and the desire for 'emotional venting', is the public's preferred and likely response. Often "the anger being expressed by others is a result of their overwhelming sense of helplessness in the situation"[16].

Nuclear emergency communicators need to be aware that public communication channels such as telephone call centres, email and social media are often the public's media of choice during emergencies. Facebook, for instance, is one of the most widely recognized social media channels, with about 750 million users in March 2011. Prior to the Fukushima Daiichi accident, the IAEA's Facebook audience (registered users) numbered about 8000 individuals, a figure that more than doubled during the accident. In total, over 7.4 million individuals read the Secretariat's Facebook postings and submitted up to 900 comments daily during the six week accident period (March–April 2011). The 'social-mediated crisis communication model'[17] foresees that, in the future, members of the public will rely upon these social media in a crisis, since the emotional support they seek is provided through a venue that also affords them an opportunity to "virtually band together, share information, and demand resolution"[18].

Radiation causes fear, since exposure can cause illness, even death, yet our senses cannot detect it. Anxiety levels surge when news breaks that radioactivity has been released as a result of an accident. In a recent survey of the media and public response to the Three Mile Island, Chernobyl and Fukushima Daiichi accidents, "people wanted to know about radiation, how much radioactivity was escaping, and whether there were health hazards.… Trying to carefully describe potential health effects also is difficult, particularly because of public fears about radiation"[19]. Radiation's health effects require a technical and scientific explanation that a frightened audience may resist or may not understand in full. "Expert evaluations of risk and the general public's risk perceptions" are

[16] REYNOLDS, B.J., When the facts are just not enough: Credibly communicating about risk is riskier when emotions run high and time is short, Toxicol. Appl. Pharmacol. **254** 2 (2011) 206–214.

[17] LIU, B., AUSTIN, L., JIN, Y., How publics respond to crisis communication strategies: The interplay of information form and source, Public Relations Rev. **37** 4 (2011) 345–353.

[18] Ibid.

[19] FRIEDMAN, S.M., Three Mile Island, Chernobyl, and Fukushima: An analysis of traditional and new media coverage of nuclear accidents and radiation, Bull. At. Sci. **67** 5 (2011) 55–65.

fundamentally different, and as a consequence, "If people feel unfavorable toward an activity they will judge it as having high risk and low benefit"[20]. In contrast to a specialist's understanding, the public's perception of risk will be based in part on emotions. Neurological findings show that "people's brains are hard wired to engage in sensory-emotive logic. Therefore, messages created with the belief that people are linear thinkers who make logical decisions may fall short of their expectation because emotion and sense come first"[21]. In short, risk communication based solely upon communicating scientific evidence, rather than as a first priority empathetically addressing the public's anxiety, is not likely to succeed.

Nuclear emergency communicators need to be prepared to provide substantive, understandable and actionable responses to the questions likely to arise should an accident occur (see Annex D). The public, which may be emotionally distraught, will expect and demand information immediately. Failure to deliver the requested information in a timely and understandable manner can cause reputational damage. One of the most pernicious consequences of limited information flow is its instigation of 'speculation that substitutes for fact', as was noted in INSAG's July 2011 letter to the IAEA Director General[22]. Rumours can cause or feed panic, thus increasing public danger. By debunking hoax messages or correcting misconceptions via Facebook, Twitter, the web site, media briefings, emails and text messages, public anxiety can be reduced. Simultaneously, this continual listening and outreach will help counter the perception that information vital to health protection is being concealed, and can in turn bolster the public's trust in those institutions that actively engage them and provide an authoritative response to their information needs. Speed in response is also a public health requirement, to be able to immediately inform affected populations about the accident's impact on health and agriculture to mitigate any consequences.

As noted, radiation risk is difficult to explain in non-technical terms. Low doses cannot be proven to present a higher radiation risk, yet they are cause for considerable public outrage and concern. Offering comparisons with risks that most people willingly and confidently accept can alleviate public anxiety. For instance, communicators during the Fukushima Daiichi accident used everyday

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[20] REYNOLDS, B.J., When the facts are just not enough: Credibly communicating about risk is riskier when emotions run high and time is short, Toxicol. Appl. Pharm. **254** 2 (2011) 206–214.

[21] Ibid.

[22] Communication dated 26 July 2011 from the Chairman of the International Nuclear Safety Group (INSAG), issued as GOVINF/2011/1 and available at: http://www-ns.iaea.org/committees/files/insag/743/INSAGLetterReport20117-26-11.pdf .

examples to provide the public an easily understandable basis for comparing the environmental radiation levels measured during the accident with the level of radioactive exposure resulting from eating a banana, sleeping next to someone every night for a year, intercontinental airline travel or a dental X ray. Experts also briefed the media during the course of the Fukushima Daiichi accident by inviting them to visit the national authorities' laboratories where food radiation levels are measured or the ports that are receiving goods, as well as by showing the media how to use radiation measurement equipment to personally verify the veracity of the data disseminated. These outreach efforts yielded greater media trust in the science and the data, and increased the media's willingness to convey risk information effectively, accurately and in context.

In an IEM summary of the May 2012 International Workshop on Crisis Communication, organized by the OECD Nuclear Energy Agency and hosted by the Spanish Nuclear Safety Council, it was noted that the global media response triggered by the Fukushima Daiichi accident led to an overwhelming public demand for information during the first weeks following the accident, which caused frustration linked primarily to diverging national recommendations on health protection measures. This response underscores the importance the public places on health related information during a nuclear emergency. Inevitably, a nuclear accident will also trigger a discussion of the merits of a nuclear power programme, which distracts emergency responders from the urgent task of emergency response to address policy issues. It is advisable to anticipate this eventuality in any emergency response communications plan.

4. LESSONS LEARNED IN PUBLIC OUTREACH OPERATIONS DURING THE FUKUSHIMA DAIICHI ACCIDENT

Due to the unusually large scale and extended duration of information demand placed on the communications infrastructure of operators, Member States and international organizations during a nuclear or radiological emergency, several operational considerations were noted during the IEM:

(a) In designing communications infrastructure, it is advisable to plan alternative communications pathways, should the existing infrastructure not survive a major catastrophe, resulting in its prolonged unavailability.

(b) Preferably, decision makers and spokespeople will be co-located to ensure sufficient information flow and message clearances.
(c) In some cases, communicators found that designating spokespeople who had no other emergency response roles except for public and media communication was an effective approach to handling the increased demand.
(d) Emergency communication strategy planners are urged to increase staffing to enable continuous efficient communication and response to demands.
(e) In particular, operators are advised to consider all the social and economic impacts of an emergency, such as the need to communicate planned electrical service cuts, in order to minimize disruptions.
(f) It is imperative to immediately inform the affected populations of an accident's potential impact on food, agriculture, forestry and fisheries so as to allow the timely implementation of food safety monitoring and agricultural countermeasures in response to the event.
(g) National authorities are also urged to ensure that information about passenger and cargo screening procedures for radiation detection and monitoring are made available to the public and stakeholders.
(h) It was advised that frequent changes of the International Nuclear and Radiological Event Scale (INES) provisional rating may cause public confusion and are best avoided. It is also advisable to provide the public an early explanation of INES' purpose and capabilities, to reduce any unjustified public expectations.

5. BEST PRACTICES

Overview: Based on the recommendations arising from the experiences of emergency communicators during the Fukushima Daiichi accident, previous nuclear and radiological emergencies, and public health emergency and natural disaster relief efforts, a number of best practices in public communication during a major emergency can be described. The implementation of these practices during the Fukushima Daiichi accident led to demonstrably greater efficiency and effectiveness in public and media interactions, and supported and strengthened the public's trust in the institutions that employed these practices.

When seeking to communicate transparently and effectively with the public during a nuclear emergency, the IEM participants advised practitioners to

consider communications as a public health tool that ranks with other tools such as epidemiology, diagnostics and clinical care. Effective communications save lives and protect the public's well-being. The communicator's role includes decrypting the technical and health issues of the accident to provide information that allows the public to plan their lives, that is, actionable information. In cases where definitive answers cannot be provided, communicators must clearly state what information is not available. When the communicated information primarily consists of technical data yet does not answer the simple question, "Are we safe?", it will not be considered by the public to be either effective or transparent. The public will also perceive the communicating institution as being non-transparent and inaccessible. Authorities and institutions are advised to be truthful, provide only the facts, promise only what can be done and is being done, and explain why some information may not be readily available, to preclude unrealistic public expectations.

In the early hours of an emergency, public demand for information surges and the response strategy needs to ensure that emergency related information is released in due time to ensure public safety and to reduce public anxiety as far as possible. Also, early engagement ensures that the public is aware that an authoritative institution is present and fulfilling its mandate to ensure public safety — an essential reputational asset that should be preserved to be certain that further messages will be believed and heeded. Given the paucity of information available at the outset of an accident, it is sufficient to acknowledge that an emergency has occurred and to explain the institutional responsibilities and current actions. The public will accept an incremental approach to explaining an accident's progression and to the situation's eventual improvement.

In a major nuclear accident, it is expected that the public will express fear and outrage. It is important for communicating institutions to anticipate and adapt their communication strategies to the socio-psychological dimensions of the public's response. An anxious public will need to hear the same message repeatedly to ensure the message's accurate reception; it is best to frequently engage the media and to maintain a low threshold for informing the public. Given the heightened need for public outreach, it is advisable to mandate emergency communicators to autonomously engage the media as the needs and opportunities arise, without the need for specific clearance. The IEM participants agreed that effective communication is enabled when clearance processes are short. For instance, the United States Centers for Disease Control and Prevention advises that preferably no more than 15 minutes should elapse between the request for a message and its clearance and release. Message clearance during a nuclear or radiological emergency will be based on technical assessments; therefore, the additional time required to develop the messages should be considered in planning and exercising clearance procedures. Lengthy clearance procedures will

hamper information flow, which in turn can present a liability for public safety and a reputational risk. In planning messages, the emergency communicators should also anticipate the public's responses to bad news resulting from the accident's consequences. In particular, operators are advised to deliver the 'bad news' first in order to underscore the operator's transparency and accountability, and to provide updates on the measures that are being taken to mitigate the accident's consequences.

To achieve a greater speed in response, unified messages and more efficient coordination, it is recommended that, in the preparatory phase, cross-governmental communication strategies be established and/or memorandums of understanding be concluded between national governmental authorities whose effective coordination is necessary in order to deliver the easily understandable, up to date radiological information needed to respond to public and media demands. These agreements can define communication pathways and the roles to develop and validate unified messages in and among national institutions. Clear communication procedures support a multidisciplinary response to complex emergencies that brings together personnel that usually are not co-located or collaborating on a regular basis. Coordination is needed when communication breakdowns occur. Critical communication infrastructure may also be affected and damaged by the same circumstances that led to an emergency, or may fail due to increased demand placed on communication systems in an emergency. The cross-governmental communication strategies and memorandums of understanding can foresee alternative communication channels and strategies that would compensate for infrastructural failure, such as satellite communications and/or social media channels, and could also serve as a planning basis for emergency exercises.

Technical and research organizations can support the development of plain language explanatory content. Since accidents have a global media impact, it is advisable to produce these materials in relevant languages, to be prepared for additional demand. By listening to feedback from social media, incoming email correspondence and the press, messages can be quickly adjusted to ensure that the information is actionable and transparent. Simultaneously, monitoring can detect rumours and false information that can then be countered. Some institutions have established a network of experts who can check facts and respond to misperceptions that are transmitted via incoming email or on social media channels.

In the view of the communication experts that participated in the IEM discussions and who deal with natural disasters, public health emergencies and nuclear emergencies, spokespeople with an 'empathetic communications aptitude' have proven to be the most effective message carriers. The IEM participants acknowledge that communication of technical and scientific

information to the public through easily understandable language requires specific training for communicators, based on a multidisciplinary approach. Therefore, it is considered prudent to provide training in empathetic communication for experts from the different areas of technical specialization.

The public and the media seek a single source of authoritative information in an emergency. Thus, it may be prudent to designate a chief spokesperson who has no other emergency response duties and can concentrate solely on public and media communications. To ensure that sufficient information is made available to the spokespeople, decision makers and spokespeople must be co-located, not separated in different headquarters. Due to the constant demand for spokespeople, their appearances should be prioritized according to the audience size of a requesting channel.

Internet based communications reach global audiences and can provide useful, real time information that the public seeks. Some authorities provide continuous updates of national radiation level measurements on a five minute basis. This information and responses to frequently asked questions are posted on popular web portals to achieve maximum visibility. In addition, practitioners recommend that the spokesperson provide press briefings twice a day. Mobile computing is becoming increasingly prevalent, thus any Internet based communications will receive a wider readership if they are designed to ensure mobile accessibility. 'Apps', or application software, are utilized in 'smart' mobile telephones and tablet computers, and they offer an additional mobile channel that can deliver text based, graphical and video based updates to a global audience. In a future emergency, an app could deliver updates and radiation monitoring information and assessments to a mobile, global audience.

Practitioners have successfully instilled and increased the media's trust in national radiation measurement sampling and monitoring procedures by providing a hands-on briefing to view the measurement procedures used to determine radiation levels in foodstuffs, water and the environment, as well as to show the media how to use the measurement instruments themselves.

With respect to testing and improving communication systems, IEM participants found that systematic, realistic exercises that involve the media and a crisis web site launch and that utilize social media contribute to effective communications in an emergency. In the preparatory phase, video conferencing systems can also be tested, since they have proven their utility in enabling emergency communication collaboration among institutions at both the national and the international levels. Likewise, it is essential to develop a social media strategy for non-emergency and emergency periods in order to be able to use this powerful channel effectively in a crisis.

6. CONCLUSIONS

The IEM participants considered a number of case studies in which nuclear power plant operators, governments and regulators, as well as international organizations, responded to the challenge of keeping the public informed during a nuclear or radiological emergency. The experts shared views on and experience in public communication during major emergencies, such as the Fukushima Daiichi, Chernobyl and Three Mile Island accidents, as well as radiological incidents and natural catastrophes.

Public responses to radiation risks, including nuclear accidents, are diverse, yet in part predictable. Thus, effective communication preparedness planning and preparation can help to improve the effectiveness of communications in an otherwise hectic period. Most importantly, communication strategies need to be developed where they do not exist and adjusted to different groups, and these groups should be identified in advance of an accident.

Given the affective coping response of audiences, it is important to reinforce messages early and often, to ensure that the message is heard, understood and accepted. The communications outcomes need to be monitored via social media to adjust messaging and focus, in order to accommodate current public concerns. Since an organization's communications resources during a nuclear emergency are limited, channel appearances need to be prioritized according to the size of the audience they serve. Broadcast television remains the preferred channel for crisis information for most audiences; it reaches the largest audience soonest and is thus the channel that communicators should consider using first when undertaking outreach in an emergency.

In a nuclear or radiological emergency, effective communication ensures that decision makers among the operators, government authorities and international organizations, as well as the public, understand the situation and have sufficient actionable information that will allow them to protect people and the environment.

A nuclear or radiological emergency is a complicated event requiring multidisciplinary coordination, including coordination among national and international emergency response authorities. At the outset of an accident, actionable information may be scarce at a time when communicators are inundated by a potentially overwhelming demand for information. Given the convergence of factors that hinder effective communications in an emergency, preparedness is a key determinant of the success of public communications.

The public's reaction during the Fukushima Daiichi accident and the subsequent public discussions on nuclear power as a safe form of energy highlight the strategic importance of communication during and following a

nuclear or radiological emergency. As was noted in the Chairperson's Summary, "Public trust is the basis for organizational credibility, so the focus for communicators involved in response to a nuclear emergency needs to be on building, strengthening, maintaining and, when necessary, rebuilding this trust. The trust and credibility that are achieved before an emergency can be instrumental in maintaining public confidence and facilitating management of response actions during and after an emergency" (see Annex A).

The task of emergency communications represents a considerable responsibility for the responding institutions. Among the most significant challenges in managing emergencies is satisfying the public and media's need for transparency, as well as gathering, processing and communicating accurate facts about the progression of the emergency. Communication in an emergency also serves as a public health measure that can save lives and reduce suffering and anxiety.

A nuclear emergency involves not only radiological effects but also the sociological, psychological and economic effects on the lives of affected populations. The effectiveness of emergency communications depends upon the communicators' capacity to deliver their messages to an anxious public. That successful transmission of key messages to the public is in part predetermined by the public's trust in the responding institution's credibility. The trust and credibility that a responding institution enjoys before an emergency can be instrumental in maintaining public confidence and facilitating the effective management of response actions during and after an emergency. Communicators involved in a response to a nuclear emergency need to focus on building, strengthening, maintaining and, when necessary, rebuilding this trust. Emergency preparedness in the area of communication can be strengthened by further developing and implementing procedures that ensure effective communication before, during and after an emergency. In order to be effective, public communications need to be conveyed in plain language that is understandable to non-technical audiences, delivered early and repeated frequently.

The best practices and principles cited in this report are offered to help strengthen public confidence by addressing public concerns more effectively through improved emergency communication.

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Annex A

CHAIRPERSON'S SUMMARY

International Experts Meeting on Enhancing Transparency and Communication Effectiveness in the Event of a Nuclear or Radiological Emergency

BACKGROUND

In the course of the implementation of the International Atomic Energy Agency's Action Plan on Nuclear Safety that was approved by the IAEA Board of Governors and unanimously endorsed by the IAEA General Conference in 2011, the IAEA Secretariat held a three-day International Experts Meeting on Enhancing Transparency and Communication Effectiveness in the Event of a Nuclear or Radiological Emergency on 18–20 June 2012, at IAEA headquarters in Vienna, Austria.

The objective of this International Experts Meeting (IEM) was to analyse relevant aspects for enhancing transparency and effectiveness in communications during a nuclear or radiological emergency, in the light of the 11 March 2011 accident at the Fukushima Daiichi nuclear power plant (the Fukushima Daiichi accident), and to identify lessons learned and best practices for improving information dissemination.

The three day IEM featured 37 expert presentations from keynote speakers and panellists, and provided an open forum for discussion. Media were invited to attend and participated in the programme.

The IEM revealed a high level of interest in sharing experience and lessons learned in the area of communication and information dissemination towards strengthening the global nuclear safety framework.

It should be noted that discussions dealt with communication in an emergency and did not cover notification systems and protocols.

The present summary was produced by the Chairperson and the Co-Chairpersons of the IEM on the basis of the proceedings of the IEM.

Overview

The Fukushima Daiichi accident posed communication challenges of unparalleled proportions. IEM participants noted that the Fukushima Daiichi accident highlighted the importance of effective and transparent communication

in the overall response to a nuclear or radiological emergency. Transparency, effective communication and dissemination of information in context, inter alia, help decision makers, the public and other stakeholders assimilate the necessary information to understand the nature of an emergency and to make informed decisions to ensure public health and safety. The Fukushima Daiichi accident also demonstrated that providing effective communication is one of the biggest challenges in an emergency. Efforts need to be taken to ensure early, frequent and transparent communication within, between and among relevant stakeholders. One aspect of transparent communication is the quality of content and not necessarily the quantity.

Emergency communications occur in a dynamic, complex and globalized environment. They build on stock knowledge acquired through long term practice which, in turn, leads to long term credibility of relevant organizations and regulatory authorities engaged in nuclear safety. There is a clear link between routine and crisis communications. Public trust is the basis for organizational credibility, so the focus for communicators involved in response to a nuclear emergency needs to be on building, strengthening, maintaining and, when necessary, rebuilding this trust. The trust and credibility that are achieved before an emergency can be instrumental in maintaining public confidence and facilitating management of response actions during and after an emergency. Emergency preparedness in the area of communication can be strengthened by further developing and implementing procedures that ensure effective communication before, during and after an emergency.

In order to be effective, public communications need to use plain language that is understandable to non-technical audiences. Lessons may be learned from best practices in other fields that use plain language to make technical information understandable. To maintain credibility and combat misinformation, the relevant organization needs to be the first to provide information about an emergency. Public communication should be early, clear and frequent.

The Fukushima Daiichi accident was the first time that many organizations used social media tools to communicate during a nuclear emergency. The appropriate use of new information technologies is challenging and should be introduced and tested in the preparedness phase. Traditional media remain one of the main information channels. Communication using both traditional and new or social media tools should be included in preparedness phase activities, such as emergency exercises.

A nuclear emergency involves not only radiological effects but also sociological, psychological and economic effects on the lives of the affected population. Emergency preparedness and response plans of States need to address these aspects.

Major Communications Lessons Learned from the Fukushima Daiichi Accident

Communications expertise needs to be strengthened across national level institutions. The provision of accurate, timely and factual information is important as part of the decision making process during and after a nuclear accident.

The technical capabilities within national institutions to respond to, understand and assess accidents, particularly accident analysis and prognosis, need to be strengthened in order to quickly and understandably explain the accident progression. In this area, technical support organizations, professional societies and other expert bodies may play a relevant role.

Public awareness and involvement in emergency preparedness and response through training, seminars and exercises at the local and regional levels should be carried out on a routine basis.

Dedicated training for those responsible for communicating with the public and the media (e.g. spokespeople, public information officers, executives, experts) must be included in the preparedness phase within the respective organization's general training programme.

IAEA safety standards, in particular the Safety Requirements on Preparedness and Response for a Nuclear and Radiological Emergency,[1] establish the requirements for an adequate level of preparedness and response, including the provision of information and issuing of instructions and warnings to the public, as well as keeping the public informed throughout the preparedness and response phases. Additional IAEA publications, such as the Manual for First Responders to a Radiological Emergency[2] and Communication with the Public in a Nuclear or Radiological Emergency[3], provide practical guidance to ensure that

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[1] FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL LABOUR ORGANIZATION, OECD NUCLEAR ENERGY AGENCY, PAN AMERICAN HEALTH ORGANIZATION, UNITED NATIONS OFFICE FOR THE CO-ORDINATION OF HUMANITARIAN AFFAIRS, WORLD HEALTH ORGANIZATION, Preparedness and Response for a Nuclear or Radiological Emergency, IAEA Safety Standards Series No. GS-R-2, IAEA, Vienna (2002).

[2] INTERNATIONAL ASSOCIATION OF FIRE AND RESCUE SERVICES, INTERNATIONAL ATOMIC ENERGY AGENCY, PAN AMERICAN HEALTH ORGANIZATION, WORLD HEALTH ORGANIZATION, Manual for First Responders to a Radiological Emergency, EPR-First Responders 2006, IAEA, Vienna (2006).

[3] INTERNATIONAL ATOMIC ENERGY AGENCY, Communication with the Public in a Nuclear or Radiological Emergency, EPR-Public Communications 2012, IAEA, Vienna (2012).

consistent messages are provided to the public before, during and after an emergency.

Within national emergency response plans, a State needs to develop and maintain procedures and tools to communicate with the public in an emergency. These procedures and tools need to account for and include the roles and responsibilities of all organizations which may be involved in an emergency. They need to consider international experience and relevant IAEA guidance and include mechanisms for the evaluation of an organization's communications effectiveness and performance.

The Inter-Agency Committee on Radiological and Nuclear Emergencies (IACRNE) and its Joint Radiation Emergency Management Plan of the International Organizations (JPLAN) proved to be an effective and comprehensive inter-agency tool for issuing joint statements and providing coordinated messages.

To ensure proper transparency, effective reporting and information exchange in an emergency, a State needs to ensure implementation of operational arrangements within the international emergency preparedness and response framework (notification and information exchange with the IAEA via the Unified System for Information Exchange in Incidents and Emergencies).

In some cases, communications from nongovernmental, professional organizations have contributed to a better understanding of a nuclear accident.

Best Practices for Effective Communication

Decision makers and communication specialists should work in close proximity, not only during a nuclear or radiological emergency, but also during regular operations.

In addition to developing relevant messages, the decision of who will deliver these messages and via which channels is essential.

Communication plans should contain arrangements for a single government spokesperson who provides briefings to the media. Joint press briefings need to be held periodically with the participation of the plant operator and local and national officials to provide a single and understandable message to the public and other interested parties.

In the event of an emergency, dedicated communications channels (e.g. specially created web sites) have been shown to be effective.

The importance of communication to the staff of organizations which may be involved in an emergency (internal communications) is vital and should not be overlooked.

The communications role and function of a regulatory body, operator and all organizations involved in emergency response should be clearly defined and

documented in a national emergency response plan before emergency operations. This needs to be exercised in the preparedness phase before emergency operations.

The communications approval process should be streamlined to ensure timely and effective delivery of information.

Availability of alternative communication channels should be ensured, to maintain communication operations in the event of degraded or unavailable communication channels (e.g. in the event of a natural disaster that occurs simultaneously with a nuclear or radiological emergency).

Development of a strategy that targets educational institutions to provide the basics of radiation and nuclear related topics can enhance knowledge.

Communications are most effective when the disseminated information is not overloaded with complex technical terminology and is relevant and understandable to the audience. Public hearings, surveys and community outreach have proven to be useful in assessing whether public concerns have been addressed and communication objectives achieved.

In the event of a severe accident, a communications team may be overwhelmed by the demand for information from journalists and the public. Arrangements for additional staff and resources should be in place and reflected in emergency plans.

Clear policies for the use of all media, including new and social media, should be established for communications during an emergency.

The Media Experience

Transparency on the part of regulators, operators and other organizations involved in emergency response translates into accurate and responsible reporting.

To enhance transparency, press conferences and briefings should be broadcast live and archived for later viewing.

Media interest in nuclear accidents and radiological emergencies is at its highest at the beginning of an event and typically wanes over time.

Training for media on nuclear energy, nuclear emergencies and emergency response can help to ensure accurate reporting.

The International Nuclear and Radiological Event Scale (INES)

The primary purpose of the International Nuclear and Radiological Event Scale (INES) is to facilitate communication and understanding between the technical community, the media and the public on the safety significance of nuclear and radiological events.

Following challenges faced in the implementation of INES during the response to the Fukushima Daiichi accident, the application of INES as a public communications tool is currently being assessed and revised by the IAEA and the INES Advisory Committee. The goal of this process is to provide additional guidance on applying INES during evolving event situations, particularly during severe nuclear accidents, and to clarify the process for establishing provisional INES ratings.

Next Steps

The information presented and discussed at the IEM should be further analysed and used in implementation of the Action Plan on Nuclear Safety.

Possible actions include:

— IAEA to provide a report that summarizes the findings, discussions and conclusions of the International Experts Meeting on Enhancing Transparency and Communication Effectiveness in the Event of a Nuclear or Radiological Emergency. The report will include papers and presentations delivered during the meeting.
— IAEA to provide Member States, international organizations and the general public with timely, clear, factually correct, objective and easily understandable information during a nuclear emergency on its potential consequences, including analysis of available information and prognosis of possible scenarios based on evidence, scientific knowledge and the capabilities of Member States.
— IAEA to facilitate and encourage information exchange and knowledge sharing among communicators who may be involved in the response to a nuclear or radiological emergency, in order to improve competence.
— Improve the availability of easily understandable information on radiation and its effects on people and the environment. This information (e.g. web site) needs be prepared in advance of a radiation or nuclear emergency.
— Some participants suggested that the IAEA should continue to promote its programmes to support Member State communication capabilities with training programmes and workshops that help deliver concrete results.
— Strengthen communication effectiveness in the event of a nuclear or radiological emergency by conducting regular and frequent emergency response exercises that include communications among national authorities, international organizations and media.
— Undertake efforts to enhance media's knowledge of radiation and nuclear technology.

— Encourage Member States to increase transparency by openly sharing the results of IAEA peer reviews on the Action Plan on Nuclear Safety web site.

Claude Birraux
20 June 2012

Annex B

CONTENTS OF THE ATTACHED CD-ROM

The following papers and presentations from the International Experts Meeting on Enhancing Transparency and Communication Effectiveness in the Event of a Nuclear or Radiological Emergency are available on the attached CD-ROM.

RELATED DOCUMENTS

Programme of the International Experts Meeting on Enhancing Transparency and Communication Effectiveness in the Event of a Nuclear or Radiological Emergency

Chairperson's Summary
C. Birraux
French Parliament, First Vice President of the Meeting Parliamentary Office for the Evaluation of Scientific and Technological Choices (OPECST), FRANCE

PRESENTATIONS

Working Session I (Monday)

Challenges in Communication during the Fukushima Nuclear Emergency

Crisis Communications: Challenges and Lessons Learned in Informing Stakeholders, Media and a Global Audience during a Nuclear or Radiological Emergency
D. Flory
Deputy Director General and Head of the Department of Nuclear Safety and Security, International Atomic Energy Agency (IAEA)

Enhancing Crisis Communications after Fukushima
C. Martínez Ten
President, Spanish Nuclear Safety Council, SPAIN

Lessons Learned from the Accident at TEPCO's Fukushima Dai-ichi Nuclear Power Station and Measures for Improvements Concerning Public Relations
Y. Moriyama
Deputy Director-General for Nuclear Accident Measures, Nuclear and Industrial Safety Agency, Ministry of Economy, Trade and Industry, JAPAN

Panel Presentations I

Challenges in Communicating an INES Rating during an Evolving Accident Situation
A. Stott
International Nuclear and Radiological Event Scale (INES) Committee

Lessons since Three Mile Island: Challenges in Ensuring the Public's Right to Know
R. Thornburgh
K&L Gates LLP, USA

Challenges in Communicating Complex Technical Issues to the Public — Chernobyl and Fukushima
E. Melikhova
Nuclear Safety Institute of Russian Academy of Sciences, RUSSIAN FEDERATION

Working Session II (Tuesday)

Case Studies in National Regulator and Affected Operator's Experiences during Nuclear and Radiological Emergencies

Decision Making for Ensuring Safety and Transparency — The Goiania Experience
P. Wieland
Brazilian Nuclear Energy Commission, BRAZIL

Regulator's Role in Enhancing Transparency in Informing the Public — The Mayapuri Accident
R. Bhattacharya
Atomic Energy Regulatory Board, INDIA

National Operator Experience and Role in Communicating the Paks Unit 2 NPP Accident
J. Bana
Paks Nuclear Power Plant, HUNGARY

Case Studies in Enhancing the Inter-Agency Response in Support of Effective Public Communication during a Nuclear or Radiological Emergency

IAEA's Role in Coordinating the Implementation of the Joint Radiation Emergency Management Plan of International Organizations
E. Buglova
International Atomic Energy Agency (IAEA)

Communicating with the Public during the Fukushima Emergency: The Philippine Experience
A.M. Dela Rosa
Philippine Nuclear Research Institute, PHILIPPINES

Reassuring the Air Travelling Public during the Emergency at the TEPCO Fukushima Daiichi Nuclear Power Plant
R. Romero
International Civil Aviation Organization (ICAO)

China's Practice of Enhancing Transparency and Communication Effectiveness after Fukushima Nuclear Accident
Xuejun Zhao
China Atomic Energy Authority, CHINA

Panel Presentations II

Public Concerns through Transparent Communication following Fukushima Crisis in Korea
Jong-In Lee
Korea Institute of Nuclear Safety, REPUBLIC OF KOREA

Gaining and Retaining Public Trust in Nuclear Power Matters: The Constraints, Enabling Conditions for Transparency
L. Reiman
Radiation and Nuclear Safety Authority, FINLAND

TEPCO Media Correspondence following the Fukushima Nuclear Accident
K. Hasegawa
Tokyo Electric Power Company, JAPAN

Media Reporting on Nuclear Emergencies: What Can We Learn for Better Communication?
T. Perko
Belgian Nuclear Research Centre, BELGIUM

Working Session III (Tuesday)

Identifying Best Practices in Effectively Addressing Public Concerns through Transparent Communication during Major Emergencies

HPA Experience of Public Communication in Different Types of Emergencies
M. Morrey
UK Health Protection Agency, UNITED KINGDOM

Creating the Legal Framework for Transparent Communication with the Public on Nuclear Safety-Related Issues
A.C. Lacoste
French Nuclear Safety Authority (ASN), FRANCE

Best Practices and Lessons Learned in Effective and Transparent Public Communication during Nuclear Emergencies
G. White
Canadian Nuclear Safety Commission, CANADA

Identifying Best Practices in Delivering Easily Understandable Information during Emergencies of Major Public Concern by National Governmental Authorities and Disaster Response and Humanitarian Relief Organizations

Effective Public Communication Following Emergencies — Understanding the Risk Environment and Educating across the Prevention, Preparation, Response and Recovery Spectrum
C. Darby
Emergency Management Australia, AUSTRALIA

Communicating in a Nuclear Emergency: The Changing Environment
E. Brenner
United States Nuclear Regulatory Commission, USA

Effective Public Health Communications during a Nuclear Emergency: Lessons Learnt and Learning Better Practices
G. Härtl
World Health Organization (WHO)

Panel Presentations III

Best Practices and Lessons Learned in Preparing and Implementing an Effective Public Communication Strategy during a Nuclear Emergency
G. Wotawa
Zentralanstalt für Meteorologie und Geodynamik, AUSTRIA

Major Radiation Accidents and International Emergency Exercises: Lessons Learned in Providing Information to the Public in Crisis Situations
S. Fesenko
Food and Agricultural Organization of the United Nations (FAO)

The Role of Professional Societies in Communication during a Nuclear Crisis: Lessons Learned from Fukushima
P. Dickman
Argonne National Laboratory, USA

Working Session IV (Wednesday)

Challenges in Communication during the Fukushima Nuclear Emergency

USNRC Approach to Effective Communications with International Counterparts
J. Ramsey
United States Nuclear Regulatory Commission, USA

Communication during the Fukushima Nuclear Accident: The Perspective of a Non-Nuclear Country
V. Tafili
Greek Atomic Energy Commission, GREECE

Effective Communication of a Nuclear or Radiological Emergency — A Developing Country's Perspective
E. Ngotho
Radiation Safety Authority, KENYA

Enhancing Transparency in Public Communications during a Nuclear or Radiological Emergency

Radiological Risk Communication in Malaysia
M. Mishar
Atomic Energy Licensing Board, MALAYSIA

Post-Fukushima Communications Vital for Borssele NPP
J.C.L. van Cappelle
N.V. EPZ, NETHERLANDS

Nuclear Crisis Communication in a Non-Nuclear Country
A.M. Østreng
Norwegian Radiation Protection Authority, NORWAY

Best Practices in Effective, Transparent Public Communication during Major Emergencies

Effective Practices in Public Communication to Mitigate Undesirable Outcomes for the General Public as a Result of a Nuclear or Radiological Emergency
M. Dimitrova-Krusteva
Nuclear Regulatory Authority, BULGARIA

The Events of Fukushima: Consequences in Terms of Communication for a Nuclear Operator. The Example of EDF
P.F. Thomé-Jassaud
EDF Nuclear Operation, FRANCE

CNCAN'S Experience and Lessons Learned in Public Communication, as a Consequence of the Fukushima Accident
M. Florescu
National Commission for Nuclear Activities Control, ROMANIA

Annex C

EMERGENCY COMMUNICATION PREPAREDNESS CHECKLIST

This checklist is based on guidance provided in the IAEA publication entitled Communication with the Public in a Nuclear or Radiological Emergency[1], as well as on the IEM participants' experience, lessons learned and best practices. It is offered as an indicative list of the capabilities that would be needed to communicate effectively and transparently in a nuclear or radiological emergency.

PRACTICAL ARRANGEMENTS FOR THE PUBLIC INFORMATION OFFICER (PIO)

Logistical arrangements for setting up the PIO response team should be developed in advance, along with all necessary procedures. Some required capacities during a nuclear or radiological emergency include[2]:

- ☐ Follow national/regional public communications plans and associated procedures, roles, responsibilities.
- ☐ Follow plan/arrangements for coordinating public communications/media relations with bordering countries.
- ☐ Maintain a roster of staff involved in public communications in emergency response.
- ☐ Activate full public information response (even in the absence of formal activation of national emergency response) and required technical and administrative support.
- ☐ Ensure functionality of dissemination capabilities (fax distribution services, listserv) for press releases, public information notices, protective actions, etc.
- ☐ Monitor press (national and international), incoming email, social media.
- ☐ Ensure that staff is coached for dealing with the media.
- ☐ Maintain a roster of media trained spokespeople.
- ☐ Draft fact sheets and questions and answers.

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[1] INTERNATIONAL ATOMIC ENERGY AGENCY, Communication with the Public in a Nuclear or Radiological Emergency, EPR-Public Communications 2012, IAEA, Vienna (2012).

[2] Ibid.

☐ Maintain maps and illustrations.
☐ Ensure that translation capabilities are available.
☐ Use templates for delivering statements, press releases, speaking points, etc.
☐ Establish a toll free telephone number for the public.
☐ Ensure that logistics and procedures are in place to establish a dedicated Public Information Centre (PIC) when necessary.

CONTACT LISTS OF PIO/TEAM

The following contact lists should be created and kept up to date at all times:

☐ A list of all staff involved, with addresses and work, home and mobile telephone numbers;
☐ A media contact list;
☐ A list of PIOs at other responsible organizations;
☐ Identification of reserve staff for administrative and support tasks;
☐ A roster of staff to ensure 24 hour coverage.

When preparing these lists, consideration should be given to the following:

☐ Allocating responsibility for regular checking, testing and updating of all contact details;
☐ Allocating responsibility for regular checking of availability of staff and updating of rosters;
☐ Ensuring acknowledgement that call-out tests take place and are monitored;
☐ Setting a time target within which the facility should be functioning at least at a minimal level;
☐ Identifying (in the procedures) whose responsibility it is to authorize the call-out in an emergency;
☐ Identifying (in the procedures) whose responsibility it is to implement the call-out in an emergency;
☐ Providing samples of likely message content to be conveyed to each individual, or a checklist of items of information that must be conveyed (in the procedures).

DEVELOPING MESSAGES FOR THE PUBLIC

Written messages will:

- ☐ Describe the radionuclide and the type of radiation involved in the emergency. Describe also the possible pathways by which people could be exposed to radiation.
- ☐ Give estimates of radiation doses, if possible, and explain how they might compare with doses from other sources of radiation, such as natural background radiation or medical practices.
- ☐ Explain the possible health implications of the doses received.
- ☐ Describe how people might be able to reduce radiation doses, by sheltering, for example.
- ☐ Make clear the areas where populations might be affected and those where people are not (or are unlikely to be) affected.
- ☐ Provide consistent, concise and clear advice. During a prolonged emergency, issuing information at regular intervals will help people cope with the effects.
- ☐ Provide reliable information and clear advice on protection.

Verbal messages will:

- ☐ Be simple and understandable (avoid jargon and complex terms).
- ☐ Be brief, concise and clear (three key messages, 9 seconds, about 30 words only).
- ☐ Meet people's needs and concerns (inform them about the threat and necessary actions).
- ☐ Be truthful, without speculation, providing the facts.
- ☐ Promise only what can be done.
- ☐ Do not blame others.
- ☐ Explain why some information may not be available.

GOOD PRACTICES

- ☐ Conduct daily, regular press conferences and post the audio files and transcripts immediately afterwards.
- ☐ Provide web updates with real-time radiation monitoring data.
- ☐ Release two sets of media talking points per day.
- ☐ Listen to media needs and social media feedback, and adapt message/focus accordingly; actively combat rumours.

- ☐ Communicate openly what is known and what is not known, emphasize public health aspects, protective measures, known, unknown consequences.
- ☐ Be prepared for frequently asked questions (see Annex D).
- ☐ Distribute and regularly update a 'fact book' (can be web and/or mobile app based) providing information about the reactor type, containment, thermal power, protection systems, operating history, the condition of nuclear materials stored on-site such as spent fuel, the hazards posed to nuclear reactors by natural events, and the various safety measures that are in place.
- ☐ Ensure that communicators have background information and access to expert counsel.
- ☐ Train expert support staff in advance to be assured of 'surge capacity'.
- ☐ Give media access to experts for background briefings.
- ☐ Reduce media scepticism/ignorance by providing media an opportunity to competently use radiation counters to measure background levels, or to view radiation monitoring equipment.
- ☐ Provide easily understandable, scientifically sound analogies to everyday 'radiation risks' most people willingly accept: air travel, eating bananas, sleeping next to someone.
- ☐ Engage the leading bloggers and active users of social media.

WEB BASED CHANNELS AND SOCIAL MEDIA

- ☐ Have a policy in place.
- ☐ The policy foresees fast approvals.
- ☐ It enables direct engagement to combat rumours.
- ☐ It establishes pathways to immediately bring public concerns expressed in social media to the attention of spokespeople, enabling them to efficiently adjust messaging to public needs.
- ☐ Expect users to express anger and fear, and to assign blame — know how to respond empathetically.

FOLLOW THE IAEA GUIDELINES FOR COMMUNICATORS

- ☐ Safety Requirements on Preparedness and Response for a Nuclear and Radiological Emergency (IAEA Safety Standards Series No. GS-R-2)
- ☐ Manual for First Responders to a Radiological Emergency (EPR-First Responders 2006)
- ☐ Communication with the Public in a Nuclear or Radiological Emergency (EPR-Public Communications 2012)

Annex D

TYPICAL PUBLIC QUERIES IN A NUCLEAR EMERGENCY

During the IEM, participants also discussed individual queries. The list included here is derived from the questions most frequently asked of the IAEA's Incident and Emergency Centre and Division of Public Information during the Fukushima Daiichi accident, as well as queries submitted during earlier emergencies. In preparation for a nuclear or radiological emergency, it is helpful to have prepared statements or information fact sheets on the following topics, which are examples of queries received via hotlines during a nuclear accident:

— Has radioactivity been released?
— If so, what kinds of radioisotopes have been released? How will they affect us?
— How much radioactivity has escaped?
— It this worse than Chernobyl, Fukushima Daiichi, Three Mile Island?
— Please explain the meaning of the numerical values reported by the media.
— Where is the plume going?
— How does radioactive iodine affect the body once it has been ingested?
— What kinds of actions should be taken to decontaminate radioactive materials? Can they be taken at home?
— Do we need to take potassium iodine pills? How many should I take? Can I give my baby potassium iodine pills?
— What could happen next? What is the worst-case scenario?
— When will you know more? Why don't you know more?
— I am pregnant. Am I going to be affected by radiation?
— Will my child have birth defects?
— We are expecting a baby, should we evacuate?
— Is it safe for breastfeeding mothers?
— I live in a city 200 km from the accident site. Is it better to avoid going out? I understand that the radiation level is going up. Is it safe?
— How does radiation travel (e.g. via a plume, wind, air and water)?
— How can radiation be spread (via natural processes, people, animals, vehicles)?
— How far can radiation travel?
— Are the implemented measures appropriate?
— Will radiation contaminate water and food supplies?
— How long will the contamination last?
— How are radiation levels monitored?
— What are the symptoms of radiation exposure?

— How do individuals know if they have been contaminated?
— Is it safe to receive an evacuee from the accident site?
— I am a patient with hyperthyroidism under treatment. Will local tap water containing radioactive iodine have a bad effect on my health?
— I am still worried even when radioactive substances detected in vegetables are within the regulated range of safety. Is there any effect on pregnant women or on children?
— The media are reporting that food has been contaminated by radiation. Are there any precautions we should take when eating vegetables and other foods?
— I have heard that radioactive substances have been detected in tap water, but I drank it without knowing it. Am I all right? May I use water to have a shower, gargle, brush my teeth, etc.?
— My children were caught in the rain when it was reported that considerable quantities of radioactivity were deposited on surfaces. Are they safe or will they get sick? What should I do?
— Can I open a window?
— I wish to take a radiation exposure measurement (contamination screening, whole-body counting). Where can I take it?
— We import a product from [the Accident State], is it safe?
— Should we screen passengers/cargo/aircraft/ships arriving from [the Accident State]?
— Should we cancel a (sporting match, trip, internship, job, university admittance, wedding, etc.) scheduled to be held in (a city in [the Accident State])?
— Where can I send money and other assistance?

Annex E

IAEA ACTIVITIES IN STRENGTHENING COMMUNICATION

Overview: To assist Member States in enhancing their emergency communications capabilities, the IAEA offers services and support, several examples of which are detailed below. In addition, the Action Plan on Nuclear Safety foresees that the IAEA Secretariat will, in any future nuclear emergency, provide Member States, international organizations and the general public with timely, clear, factually correct, objective and easily understandable information on the potential consequences, including analysis of available information and prognosis of possible scenarios based on evidence, scientific knowledge and the capabilities of Member States. In order to establish the means and measures to achieve that outcome, a set of operating principles has been adopted by the Director General and is also detailed below.

COMMUNICATION SUPPORT IN STAKEHOLDER INVOLVEMENT

For Member States that operate nuclear power plants or that are embarking on a nuclear power programme, the IAEA provides support in improving their stakeholder involvement plans, to utilize open and transparent communications, to address stakeholders' concerns and to provide factual, timely, correct and concise information. This support is provided via the IAEA safety standards, guidance publications, workshops, training, appraisal services and peer reviews. For instance, communications preparedness and practice is considered through the following peer review services: Emergency Preparedness Review (EPREV), Integrated Nuclear Infrastructure Review (INIR), Integrated Regulatory Review Service (IRRS) and Operational Safety Review Team (OSART).

In particular, the IAEA organizes workshops to help Member States establish their strategy, develop and review their plans, and train communications staff, with the help of subject matter experts in nuclear communications from around the world.

In the case of a State developing a nuclear power programme for the first time, one of the 19 infrastructure issues that need to be addressed is the establishment and maintenance of effective stakeholder involvement regarding the nuclear power programme. This issue and its recommendations are discussed in the IAEA Nuclear Energy Series publications on Milestones in the

Development of a National Infrastructure for Nuclear Power[1], and on the Evaluation of the Status of National Nuclear Infrastructure Development[2], and during INIR missions. Other specific activities include networking and sharing of information on communication, facilitated by the IAEA, and consultation with interested parties among regulatory bodies, authorized parties and other relevant governmental organizations from African, Arab, Asian and Latin American countries within the respective networks, including: the Forum of Regulatory Bodies in Africa (FNRBA), the Arab Network of Nuclear Regulators (ANNuR), the Asian Nuclear Safety Network (ANSN) and the Ibero-American Forum of Radiological and Nuclear Regulatory Agencies (FORO). All of these networks are included within the Global Nuclear Safety and Security Network (GNSSN), which is maintained by the IAEA and helps to facilitate communication and information exchange.

COMMUNICATION SUPPORT IN PREPAREDNESS FOR AND RESPONSE TO NUCLEAR AND RADIOLOGICAL EMERGENCIES

The IAEA training programme on preparedness for and response to nuclear and radiological emergencies follows IAEA Safety Standards Series No. GS-R-2, Preparedness and Response for a Nuclear or Radiological Emergency[3], including the following requirements: that all persons associated with performing functions in a nuclear or radiological emergency be suitably trained and qualified so that they understand their responsibilities and perform their duties safely, and that response organizations identify the knowledge, skills and abilities necessary to be able to perform the emergency response functions. A further requirement of

[1] INTERNATIONAL ATOMIC ENERGY AGENCY, Milestones in the Development of a National Infrastructure for Nuclear Power, IAEA Nuclear Energy Series No. NG-G-3.1, IAEA, Vienna (2007).

[2] INTERNATIONAL ATOMIC ENERGY AGENCY, Evaluation of the Status of National Nuclear Infrastructure Development, IAEA Nuclear Energy Series No. NG-T-3.2, IAEA, Vienna (2008).

[3] FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL LABOUR ORGANIZATION, OECD NUCLEAR ENERGY AGENCY, PAN AMERICAN HEALTH ORGANIZATION, UNITED NATIONS OFFICE FOR THE CO-ORDINATION OF HUMANITARIAN AFFAIRS, WORLD HEALTH ORGANIZATION, Preparedness and Response for a Nuclear or Radiological Emergency, IAEA Safety Standards Series No. GS-R-2, IAEA, Vienna (2002).

IAEA GS-R-2 is that these persons make arrangements for the selection of personnel and for training to ensure that the personnel selected have the requisite knowledge, skills, abilities, equipment, procedures and other arrangements to perform their assigned response function.

The IAEA training programme on emergency preparedness and response develops and makes available standardized courses, including lecture materials, tools and other resources, to support national and regional capacity building. Training in preparedness for and response to nuclear and radiological emergencies is predicated on the concept of self-sustained education and training in Member States. Competence is acquired, developed and maintained through an established programme of training. The five day training course on communication with the public in a nuclear or radiological emergency is based on the IAEA publication entitled Communication with the Public in a Nuclear or Radiological Emergency[4]. It aims to improve efficiency and effectiveness in communicating with the media and public during a nuclear or radiological emergency. It provides practical training to those responsible for keeping the public and media informed, and for coordinating with all sources of official information in a nuclear or radiological emergency. Participants are public information personnel at the facility, local and national levels, and emergency managers and emergency coordinators.

Since 1999, the IAEA has provided the EPREV service to appraise, independently, preparedness for a nuclear or radiological incident or emergency in Member States. An EPREV mission provides an appraisal by the IAEA and international experts, focusing on preparedness for response to a nuclear or radiological emergency and assessing the capability to respond to such situations. An EPREV mission can be structured flexibly, ranging from an appraisal of the arrangements at a specific installation to a full appraisal of all of the arrangements in a requesting Member State, including on-site, off-site and national arrangements, measured against international standards in emergency preparedness and response. In all cases, the facility categorization laid down in IAEA GS-R-2 is used as the starting point for determining the scope and content of the appraisal.

The EPREV service includes a self-assessment questionnaire for the national coordinating authority for emergency preparedness and response, and for organizations involved in emergency preparedness and response in Member States to assess their level of compliance with the requirements in IAEA GS-R-2.

[4] INTERNATIONAL ATOMIC ENERGY AGENCY, Communication with the Public in a Nuclear or Radiological Emergency, EPR-Public Communications 2012, IAEA, Vienna (2012).

In the area of public communications, Member States are requested to grade themselves on:

(a) Providing information and issuing instructions and warnings to the public by making arrangements for:
    (i) The provision of prompt warning and instructions to the permanent, transient and special population groups or those responsible for them, and to special facilities in the emergency zones upon declaration of an emergency class.
(b) Keeping the public informed by making arrangements for:
    (i) Providing useful, timely, truthful and consistent information to the public in the event of a nuclear or radiological emergency;
    (ii) Responding to incorrect information and rumours;
    (iii) Responding to requests for information from the public and from news and information media.

IAEA OPERATING PRINCIPLES FOR COMMUNICATION IN A RADIOLOGICAL OR NUCLEAR EMERGENCY

The Action Plan on Nuclear Safety specifies several actions to "[e]nhance transparency and effectiveness of communication and improve dissemination of information", including calling upon the "IAEA Secretariat to provide Member States, international organizations and the general public with timely, clear, factually correct, objective and easily understandable information during a nuclear emergency on its potential consequences, including analysis of available information and prognosis of possible scenarios based on evidence, scientific knowledge and the capabilities of Member States"[5]. In order to strengthen and align the Secretariat's means to achieve that outcome, operating principles were adopted by the IAEA Director General in September 2012[6] that foresee the following arrangements to support the Action Plan's aims as specified above:

[5] See the reference to "Communication and information dissemination" in: Draft IAEA Action Plan on Nuclear Safety, Report by the Director General, GOV/2011/59-GC(55)/14, IAEA, Vienna (2011).

[6] The 'Operating Principles' were approved by the IAEA Director General on 6 September 2012, and their implementation began in the fourth quarter of 2012.

(a) Especially when the facts are unclear or unavailable, undertake early, frequent, and plain language media and public outreach that acknowledges public anxiety and addresses public health concerns, such as answering the question for various audiences, "Am I safe?".
(b) Be prepared to announce/confirm 'bad news' as soon as possible after an emergency is declared, and when an accident worsens, including communicating credible 'worst case' assessments and the necessary measures to prevent them.
(c) Ensure the shortest possible clearance procedures for public communications in order to be able to respond with the least delay in a swiftly changing environment.
(d) Designate and train spokespeople to provide brief, empathetic, plain language responses under dynamic emergency conditions. The designated spokespeople should have the needed technical expertise and empathetic communication skills to allow them to engage confidently with an audience whose behaviour may be hostile or disoriented.
(e) Conduct exercises dedicated to improving communications in a nuclear emergency, in collaboration with national and international emergency response organizations to assess and improve within the Inter-Agency Committee on Radiological and Nuclear Emergencies (IACRNE), as well as other national regulatory and technical organizations.
(f) Designate dedicated staff experts to support the public communications team in producing plain language explanatory material in advance of, and during, an emergency.

NEXT STEPS

In view of the implementation of the Action Plan on Nuclear Safety, the IAEA Secretariat is continuing to develop a number of activities to support emergency communicators in order to strengthen competence, including activities in the areas of: facilitating information exchange and knowledge sharing; developing easily understandable information on radiation and its effects on people and the environment in preparation for emergencies; enhancing the media's knowledge of radiation and nuclear technology; facilitating and encouraging information exchange and knowledge sharing among communicators; promoting the IAEA's programmes to support Member State communication capabilities with training programmes and workshops; and conducting regular and frequent emergency response exercises that include communications among national authorities, international organizations and the media.

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