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Security and resilience — Emergency management — Guidelines for public warning

Sécurité et résilience — Gestion des situations d'urgence — Lignes directrices relatives aux mises en garde de la population

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 292, *Security and resilience*.

This second edition cancels and replaces the first edition (ISO 22322:2015), of which it constitutes a minor revision.

The changes are as follows:

— the title has been updated;

— references to guidance in other relevant standards have been added;

— the Bibliography has been updated.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Disasters, terrorist attacks and other major incidents need an effective incident response in order to save lives, mitigate harm and damage. Emergency response organizations need to respond quickly to a developing emergency situation. Time to communicate is limited and often a specific message involving practical action is to be disseminated to a large group. Simple procedures that send the message efficiently and create the desired response can save lives, protect health and prevent major disruptions.

The protection of people at risk from harm is an important part of an incident response. Public warning enables response organizations to alert their responders and allows people at risk to take safety measures to reduce the impact of incidents. Effective public warning consisting of alert and notification can prevent panic reactions and support response organizations in optimizing their responses and mitigating the impact.

Effective incident response needs a structured and pre-planned public warning. Public warning is based on two functions: hazard monitoring and warning dissemination. It is also necessary to establish a mechanism for risk identification, hazard monitoring, decision-making and warning dissemination, and to evaluate and improve.

Security and resilience — Emergency management — Guidelines for public warning

1 Scope

This document gives guidance on developing, managing and implementing public warning before, during and after incidents.

This document is applicable to any organization responsible for public warning. It is applicable at all levels, from local up to international.

Before planning and implementing the public warning system, the risks and consequences of potential hazards are assessed. This process is not part of this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 22300, *Security and resilience — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 22300 apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Public warning system

4.1 General

The organization should establish, document, implement, maintain and continually improve a public warning system (see Figure 1) based on a public warning policy.

NOTE 1   This document does not describe the public warning policy.

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                    │  Public warning policy  │
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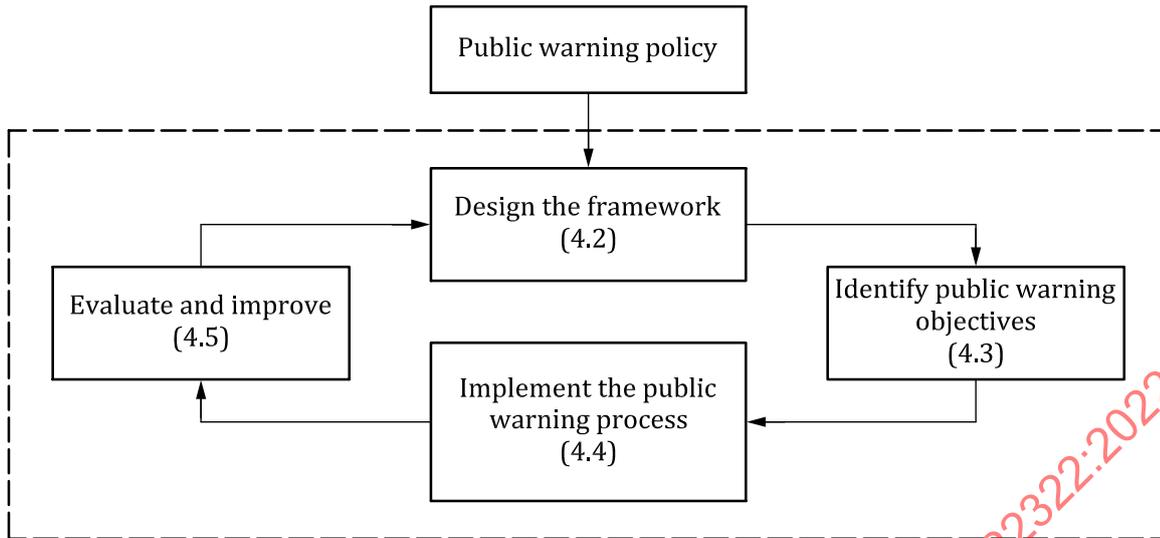
Figure 1 — Overview of the public warning system

The organization should assess the potential hazards that can occur within a defined area and the level of potential risk each presents. The results of this assessment should determine the type of public warning that can be required and should be documented for future reference. The public warning system developed by the organization should:

a) provide the framework for setting and reviewing public warning objectives;

b) be planned in advance;

c) be documented, implemented and maintained;

d) have the human and technical resources to plan, implement, maintain and improve the public warning system;

e) be communicated to all persons working for or on behalf of the organization;

f) provide suitable training for responders;

g) be available and communicated to the public generally and especially to the people at potential risk;

h) involve appropriate consultation with community representatives (this may include, but not be limited to, community groups, mutual aid networks, political representatives, charities and non-governmental organizations (NGOs), trade, and business associations) or bodies concerned with public interests;

i) include a commitment to continual improvement.

NOTE 2   ISO 22320 provides guideline for incident management to any organization involved in responding to incidents of any type and scale.

4.2   Design the framework

4.2.1   General

The organization should design a framework based on two functions: hazard monitoring and warning dissemination. The responsibility for issuing public warning should be assigned to the interested

parties who are individual experts, groups of experts, or organizations in the private or public sectors at the local up to the international level. Those who contribute to both functions should:

a) be familiar with the capabilities and capacities of the public warning system so that relevant, accurate, reliable and timely warnings will be disseminated;

b) make continuous effort to raise and maintain public awareness (see Annex B);

c) specify safety actions within the warning.

4.2.2 Hazard monitoring function

Hazard monitoring is based on the risk assessment conducted to determine the hazards to be monitored.

Those involved in the hazard monitoring function are responsible for the following:

a) understanding hazard monitoring operations from local up to international agencies and having channels to communicate with them;

b) ongoing monitoring of identified risks within a defined area and within their range of expertise;

c) providing early information on emerging risks;

d) providing information about changes to the risk level;

e) defining the emergency measures to be taken;

f) notifying the warning dissemination function;

g) cooperating with public authorities to enhance public awareness.

The monitoring should be based on scientific data and/or credible evidence.

NOTE   The hazard monitoring function monitors potential risks that the hazards present.

4.2.3 Warning dissemination function

The warning dissemination function is responsible for the following:

a) promptly activating procedures for disseminating public warnings;

b) transforming evidence-based information into notification and alert messages;

c) specifying procedures for disseminating warning messages;

d) considering the information needs of the people at risk and the diverse range of vulnerable groups;

e) coordinating with other organizations accountable for public warning;

f) promptly disseminating public warnings.

4.2.4 Responsibility for authorizing public warning

The organization should identify the individual or group responsible for authorizing public warning as determined by national or local regulations or the organization's own responsibility structure. Authorization should be based on the requirements of the public warning policy and objectives, and the input from the hazard monitoring function and warning dissemination function, as well as other relevant sources. A trained and nominated individual or group of individuals should be assigned to use hazard monitoring information to make timely, relevant and accurate decisions about public warning dissemination.

4.3   Identify public warning objectives

The organization should identify objectives for the public warning system based on the public warning policy. These objectives should be considered when using the information from the hazard monitoring function to identify the people at risk and the potential impact of an incident on an area.

4.4   Implement the public warning process

The organization should implement a public warning process in accordance with Clause 5.

The organization should establish effective inter-organizational cooperation and coordination between the hazard monitoring function and warning dissemination function, as well as among other relevant interested parties including community groups.

All operational activities within the public warning process should be logged in a retrievable format.

4.5   Evaluate and improve

The organization should evaluate the performance of hazard monitoring and warning dissemination functions on a regular basis. The findings from the evaluation should be used to identify potential improvements.

Evaluation processes should be conducted at regular intervals not exceeding five years.

The warning dissemination function should evaluate the content and timeliness of notifications and alerts, as well as the choice of communication channels.

Evaluation processes should be activated whenever the people at risk have not taken the expected safety actions.

5   Public warning process

5.1   General

The public warning process should include all the elements shown in Figure 2.
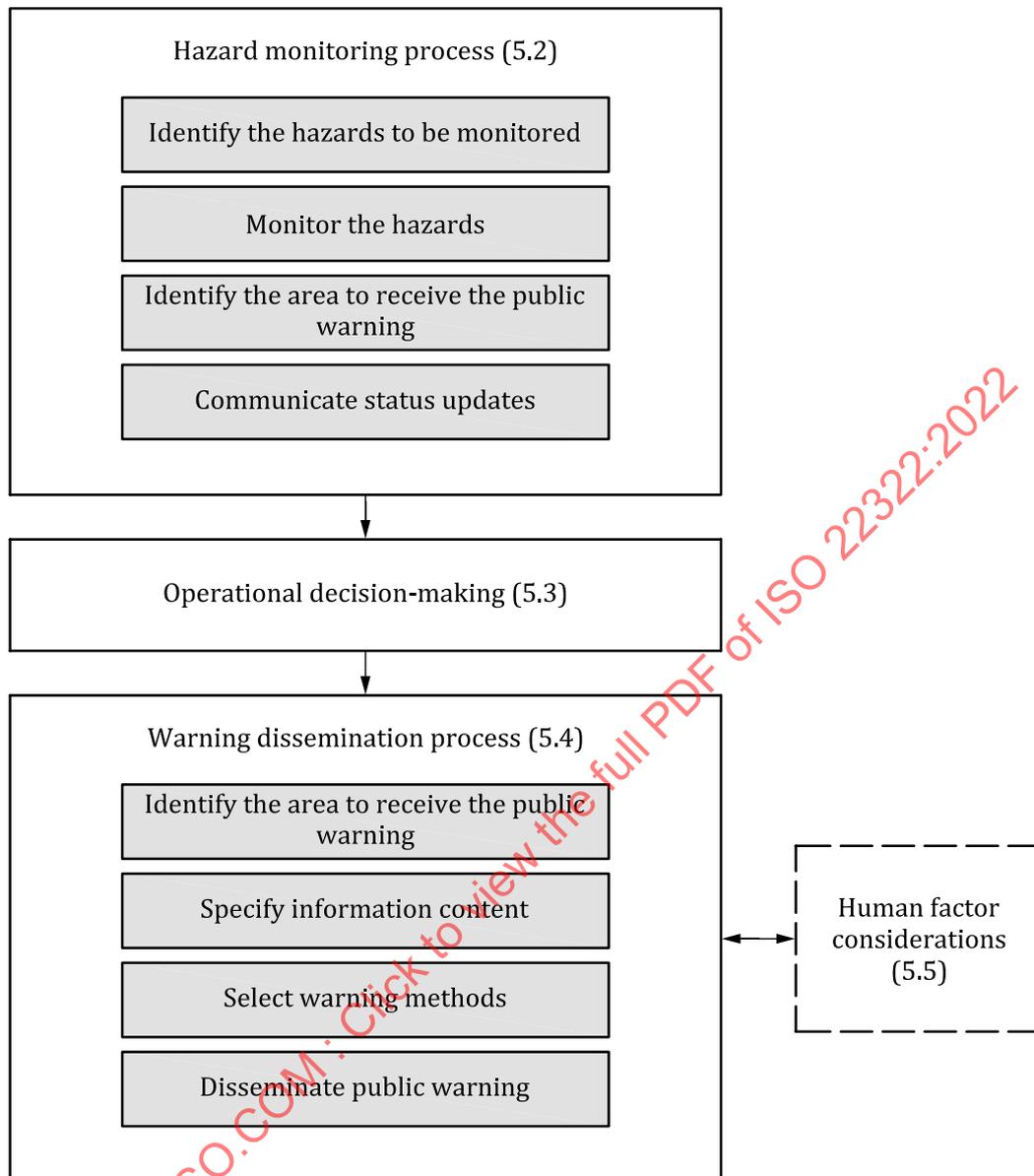
Figure 2 — Overview of the public warning process

5.2 Hazard monitoring process

5.2.1 Identify the hazards to be monitored

The hazard monitoring function should:

a) identify and list relevant hazards;

b) establish indicators to be used to monitor the status of a hazard;

c) determine the science-based or credible evidence-based criteria for issuing a public warning;

d) identify the criteria for issuing a notification, an alert and an all clear;

e) determine the criteria for each area(s) of risk.

5.2.2 Monitor the hazards

The hazard monitoring function should:

a) assign those with appropriate knowledge of hazard monitoring operations;

b) collect scientific data for risk assessment for each area at risk;

c) prepare decisions on issuing public warning for the warning dissemination function;

d) obtain the risk information recommended to be included in the public warning;

e) pass the information to the warning dissemination function immediately.

5.2.3 Identify the area to receive the public warning

For each area at risk, the hazard monitoring function should identify the following:

a) the area at risk where the warning is to be sent;

b) the people at risk within that area;

c) the responsible warning dissemination function within that area;

d) the risk to adjacent areas that can potentially be affected.

5.2.4 Communicate status updates

The hazard monitoring function should:

a) provide regular hazard status updates to the warning dissemination function, to those responsible for authorizing public warning and, as appropriate, to the people at risk;

b) request confirmation that the status updates have been received and considered;

c) inform the people at risk about the risk threshold for each area.

5.3 Operational decision-making

The organization should establish a decision-making process which includes the following:

a) evaluation of the input from the hazard monitoring function;

b) the type and content of the public warning to be disseminated to the people at risk;

c) how the public warning is to be communicated;

d) evaluation of the available resources;

e) the time frame for issuing the warning;

f) an assessment of the need for coordination and cooperation.

5.4 Warning dissemination process

5.4.1 General

The warning dissemination function should:

a) assess the information received from the hazard monitoring function to determine the risk level within the area at risk;

b) implement processes which minimize the delay between the receipt of the information and warning activation;

c) assess their local risk in accordance with the criteria for a notification, an alert and an all clear;

d) evaluate and update the criteria on a regular basis.

5.4.2 Capturing of the characteristics of the area to receive the public warning

The warning dissemination function should consider the following when identifying the area at risk:

a) the nature and severity of risk;

b) geographic and topographic features of the area;

c) the number of people at risk;

d) the vulnerability of the people at risk;

e) weather conditions and forecast.

5.4.3 Specify information content

5.4.3.1 General

The warning dissemination function should specify the information content, considering the following:

a) who should issue the public warning;

b) who should receive the information;

c) when the public warning is to be issued;

d) who is expected to take action and why action is required;

e) what action is expected and when;

f) what to expect as the situation develops;

g) how the people at risk can access additional information.

Public warnings should consist of alert and notification. See Annex A for the relationship between alert and notification in public warning.

5.4.3.2 Alert

The purpose of an alert is to attract the attention of people in a developing emergency situation by stimulating the auditory, visual and tactile senses so that they will take appropriate safety actions and seek additional information. ISO 22324 provides further guidance on colour-coded alerts.

The warning dissemination function should ensure that the alert gains maximum attention, considering the characteristics and conditions of the people at risk including the requirements of vulnerable groups.

5.4.3.3 Notification

The purpose of notification is to provide essential information prior to the incident to people at risk regarding the decisions and actions necessary to cope with a developing emergency situation.

The notification should be timely and appropriate to the people who are potentially at risk, and should reflect the current status of the situation. The information should be supplemented by pictograms, graphic symbols and/or signs.

The warning dissemination function should consider the following when preparing a notification:

a) the type and purpose of the alert that will be issued;

b) the hazard, threat or emergency situation prompting the notification;

c) when the emergency situation is expected to occur;

d) the people at risk to whom the notification applies;

e) the appropriate safety actions to be taken;

f) when additional information will be available and how to get it.

5.4.4 Select warning methods

The warning dissemination function should determine the appropriate warning methods, considering the following factors:

a) the time needed to allow people to follow the instruction (timeliness);

b) the availability, effectiveness and technical reliability;

c) how easily people can access the transmitted message including vulnerable people.

The warning dissemination function should consider the capability of the range of communication channels to provide for maximum coverage and for timely distribution. Examples of existing communication channels are the following:

— multi-purpose public person-to-person (telephone, fax, cellular phone);

— public broadcasting (TV, radio, cellular broadcast);

— print media (newspapers);

— dedicated warning systems (sirens, smoke alarms, indoor receiver, loud speakers, vehicles with public address loudspeaker systems);

— information and communication technology (ICT)-based media (web pages, email, SMS and social media);

— direct personal communication (neighbour to neighbour, workplaces).

The warning dissemination function should use multiple communication channels simultaneously and in a complementary way.

New and emerging communication channels should be considered as they become available. ISO 22329 provides further guidance on the use of social media in emergencies.

The warning dissemination function should monitor the communication channels used in order to maintain the quality of the warning dissemination and conduct periodic evaluations for effectiveness and consistency.

5.4.5 Disseminate public warning

The warning dissemination function should:

a) send out the information repeatedly using multiple communication channels and in appropriate languages;

b) identify the date and time of issue for repeated and periodic public warnings;

c) consider the needs of a transient population who are unfamiliar with the local environment;

d) confirm that the content of alerts, notifications and related information meets the needs of vulnerable groups;

e) request feedback from interested parties to improve warning dissemination.

NOTE   Media outlets have an important role to play in informing people at risk. There is a benefit from establishing relationships with media outlets. For better collaboration with media outlets, it is important to understand media news cycles and deadlines.

5.5 Human factor considerations

Human factors take into account the ability of the people at risk, particularly those with disabilities, to receive and understand public warning messages. The ISO 9241 series provides further guidance on human factors.

Public warning should consider the human factors that influence the effectiveness of safety actions to be taken by people at risk. It should ensure equal access to warning information and alerts, and that the information received is understandable so that the people at risk, including those with diverse social and cultural needs, can respond as expected and take the appropriate action.

NOTE   "Human factors" is the scientific discipline addressing human characteristics including biomedical, psychological and psychosocial characteristics. It includes principles and applications in the personnel selection areas, tools for job performance and human performance evaluation.

Annex A
(informative)

Relationship between alert and notification in public warning

Public warning consists of alert and notification (see Figure A.1).

An alert can be disseminated before an impact due to an incident when a prediction is possible or immediately after an impact.

Notification serves as part of education, public awareness and exercise in order to prepare people potentially at risk for imminent incidents. Notification can also be part of the prevention measures in case of predictable incidents to inform people potentially at risk how to prepare themselves on how to respond to simple forecasts up to evacuation notices. When an alert is disseminated, notification serves to inform about what has happened, who is affected, where danger might be and how to take protective measures. When appropriate, notification includes information with advisory or compulsory instructions.

Notification is made repeatedly and frequently until the "all clear" is issued.
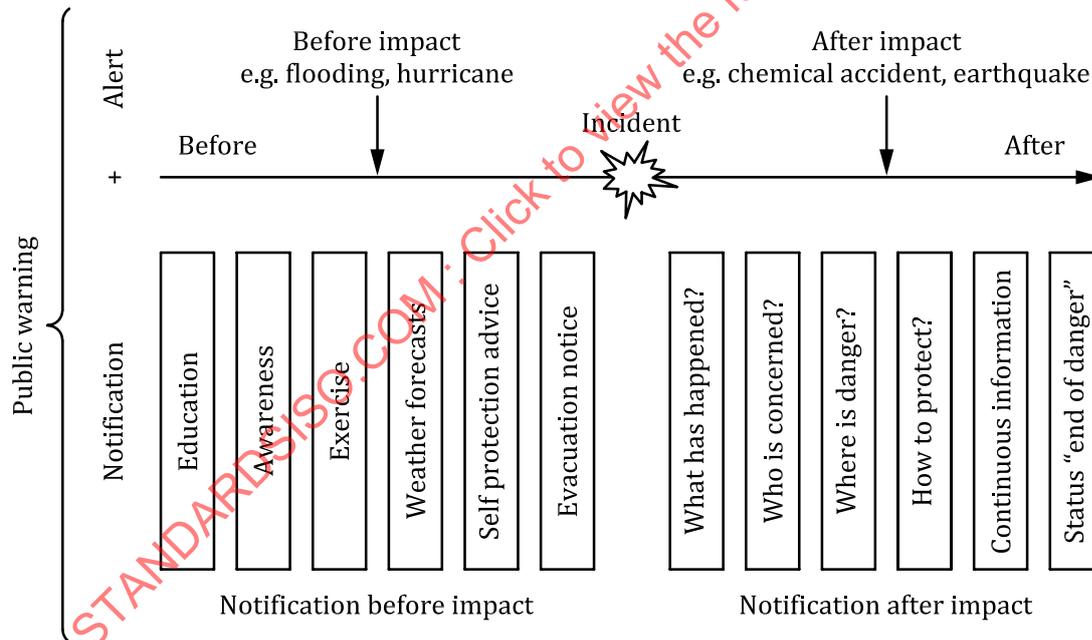

Figure A.1 — Relationship between alert and notification in public warning