



Risk communication is the need to communicate important and life-saving information to emergency managers, local authorities, and the public in ways that are easily received, digested, and acted upon. A goal of risk communication is to help people understand potential hazards to their person, property, or community. Risk communication is a critical component of effective risk-informed decision making associated with dams and must be integrated into all aspects of the risk management process.

Communication is important in all aspects of dam safety within an organization, with the public, and with the specific owners or stakeholders of a project. Risk communication and stakeholder participation should ensure that (1) responsible and affected stakeholders will be partners and be afforded the opportunity to participate in decisions that affect them, and (2) communications regarding potential inundation hazard, consequences, and shared solutions will be open, transparent, and understandable.

A focus on communicating the benefits and risks associated with dams to stakeholders and the public can help increase awareness of potential dam safety issues and help all parties gain a greater understanding of how dams impact their community. This creates an understanding of risk and dam safety issues important for those with varying degrees of connections to the dam; these diverse groups have a variety of backgrounds, experience, and sophistication.

FEMA P-956, *Living with Dams: Know Your Risks*, provides valuable information and is available in the FEMA Library at: www.fema.gov/media-library/assets/documents/28161.

Develop Communication Plans For:

- ✓ Internal use at dam safety organizations
- ✓ Dam site and project personnel
- ✓ Owners and stakeholders
- ✓ Local organizations
- ✓ Technical organizations or consultants
- ✓ Decision makers
- ✓ Upstream and downstream public

Principles Important to Risk Communication

- » Enhance communication with the public, internally within dam owning and regulating organizations, and Emergency Management Agencies.
- » Emergency Action Plans and communication with the public are important and integral aspects of reducing risk to life.
- » Communication should be open and transparent; an interactive, two-way exchange of information.
- » When presenting dam safety issues at a given dam, focus on both the benefits and the risks posed by the infrastructure.
- » Integrate risk communication strategies early and often — before the need arises to respond to a dam safety issue.
- » Provide context for risk communication (compare with other risks).
- » Focus communication on actions that individuals/organizations need to take.
- » Discuss uncertainty in risk estimates.
- » Signs and warnings on infrastructure should be legible and readily visible.

More in-depth information can be found in FEMA P-1025, *Federal Guidelines for Dam Safety Risk Management*, downloadable at www.fema.gov/zh-hans/media-library/assets/documents/101958.

Risk Communication for Dams

Communicating risk begins with understanding risk. By understanding its risks, a community can make smart decisions about how to manage risk, including developing needed capabilities. Dam owners can undertake several planning and preparedness activities that may help them better understand the risk related to their dam. Doing so will help improve emergency response actions and build relationships with local officials and emergency managers. Activities such as conducting risk assessments, preparing emergency response plans, and identifying infrastructure in the flood zone through inundation mapping are beneficial for a dam owner and emergency managers.

Risk Assessment: Risk is the potential for an unwanted outcome resulting from an incident, event, or occurrence, as determined by its likelihood and the associated consequences. By considering changes to these elements, a community can understand how to best manage and plan for its greatest risks across the full range of the threats and hazards it faces. The Threat and Hazard Identification and Risk Assessment (THIRA) process helps communities identify capability targets and resource requirements necessary to address risks. Learn more in the Comprehensive Preparedness Guide 201: www.fema.gov/media-library/assets/documents/26335.

Emergency Action Plan (EAP): A plan of action to be taken to reduce the potential for property damage and loss of life in an area affected by a dam failure or large flood. See the Federal Guidelines for Dam Safety: Emergency Action Planning for Dam Owners for detailed guidance on emergency action planning and developing your EAP. The guide can be downloaded from www.fema.gov/media-library/assets/documents/3357.

Inundation Map: A map showing areas that would be affected by flooding from releases from a dam's reservoir. The flooding may be from either controlled or uncontrolled releases or because of a dam failure. A series of maps for a dam could show the incremental areas flooded by larger flood releases. See the Federal Guidelines for Inundation Mapping of Flood Risks Associated with Dam Incidents and Failures for detailed guidance on inundation mapping at www.fema.gov/media-library/assets/documents/34193.

Dam Failures

Dam failures do not happen often, but when they do occur, they are high consequence events. Good planning and improved dam safety programs have reduced loss of life and property damages dramatically in recent years. Most failures fall into one or more of the following categories:

Structural failures: Foundation defects, including settlement and slope instability, internal erosion, or damage caused by earthquakes, have caused about 30 percent of all dam failures in the United States.

Mechanical failures: Malfunctioning gates, conduits, or valves can cause dam failure or flooding both upstream and downstream and account for about 36 percent of all dam failures in the United States.

Hydraulic failure: Overtopping of a dam is often a precursor to dam failure, which generally happens during or after a high-precipitation event. National statistics show that overtopping due to inadequate spillway design, debris blockage of spillways, or settlement of the dam crest accounts for approximately 34 percent of all dam failures in the country.

Planned Releases

Operation of spillways, either planned or in response to emergency situations, can create flooding and public safety hazards, even in the absence of a dam failure. During periods of extreme flow, dams may fill to capacity, necessitating emergency releases that can flood downstream areas. Many dams incorporate sirens to warn the public of an impending release.

The Association of State Dam Safety Officials' Public Safety Around Dams website highlights various public awareness and public safety initiatives that have been mounted by dam owners, states, and communities to help prevent drownings at dams.

Visit the website at goo.gl/LFYxAw.