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## 1. Introduction

This Fact Sheet provides guidance on what, how, when, and to whom to communicate, as well as the pitfalls to avoid when communicating about contaminants of emerging concern (CEC). It is intended to support state-level programs and project managers with specific information about communicating CEC to stakeholders. It is neither a “how-to” guide nor a project-specific tool for risk communication. The ITRC Risk Communication Toolkit contains much more detail, including guidance on communications plans, message maps, and audience identification, among other tools. A list of additional resources about risk communication is included in Section 5.

## 2. Risk Communication Basics

There are many different definitions of risk communication. For this Fact Sheet, we will use the United States Environmental Protection Agency (USEPA’s) definition: “Communication intended to provide a general or specific audience with the information they need to make informed, independent judgments about risks to their health, safety, and the environment” (OA USEPA 2021).

Likewise, there are multiple definitions of “risk.” The definition often used by risk assessment professionals is that risk is the potential for realization of unwanted, adverse consequences to human life, health, property, or the environment. Estimation of risk is usually based on the expected value of the conditional probability of the event occurring multiplied by the consequence of the event, given that it has occurred (ITRC 2020).

Effectively communicating risk requires understanding both the professional’s viewpoint and that of the public. The public’s understanding of risk often differs significantly from the professional’s assessment. It may be based more on a sense that something is harmless or unacceptably dangerous rather than objective data. This perspective may focus on things not easily measured, such as fear, anger, mistrust, or unfairness (Covello and Allen 1988). This view of risk is often referred to as “outrage” or “subjective risk” (Sandman 2012; Telg 2010). Effectively communicating risk requires understanding both the professional’s viewpoint and that of nonexperts, such as the public or other stakeholders.

Risk communication is intended to educate people so they can make informed decisions about risk. This can be accomplished in multiple ways, depending on the audience and situation, but most communication products about CEC will use one of two approaches:

- Encourage stakeholders to take action to reduce risk, also known as “precaution advocacy” (Sandman 2007)
- Reduce stakeholder perception of a disproportionate level of risk, also called “outrage management” (Sandman 2007)

Note that while stakeholders are often the general public or affected communities, they can just as easily be internal leaders or decision-makers. In many cases, these internal stakeholders are not experts in the subject matter or in risk communication. It may be just as important to encourage them to take action or to reduce their anxieties as it is with the general public. Risk communicators (which for our purposes may include internal subject matter experts) may find themselves attempting to get additional resources for monitoring or research for a CEC or divert resources to an area more important to public or environmental health.

Examples of precaution advocacy can include risk avoidance actions like smoking cessation, programs that promote radon testing in the home, or simply participating in listening sessions. Outrage management is used when stakeholders have a high level of concern about an issue, but the available data does not support such concern. In this situation, communication efforts should seek to calm stakeholder concerns while simultaneously being empathetic. Typical examples are attempts to reduce community concern around potential pollution sources that appear to have a limited effect on the surrounding area. Additional guidance on effective communication using message mapping tools can be found in ITRC’s risk communication guidance (ITRC 2020).

Whether you succeed at inspiring people to take action or calming their concerns depends on the level of trust you develop with the audience. A community’s trust in the risk communicator is challenging to build, but easily broken. It is imperative to communicate in a way that connects with the audience; and is honest, transparent, and empathetic. This can be summarized as “know your audience.”

Most of this Fact Sheet focuses on educating and communicating with the general public. Your internal stakeholders may be making final decisions about agency priorities, so educating your internal stakeholders about the risks associated with CEC is as essential—or even more so, in some cases—as educating the public. These skills are also useful to subject matter experts who may not normally be the face of the organization when public interest is high. While the communication professionals typically write the press releases and deliver the message to mass audiences, it is often the subject matter experts who are answering individual phone and email inquiries from the public.

## 3. Risk Communication: Considerations and Challenges with CEC

### 3.1 Communicating Uncertainty

The Key Variables Fact Sheet includes a flowchart for the recommended process of evaluating and prioritizing potential CEC. It identifies a logical process for assessing whether substances are low, medium, or high priority based on occurrence, toxicity, and physical-chemical criteria. A potential CEC can be shifted between priorities at any time. In short, uncertainty is a major factor when communicating with the public and other stakeholders. It is essential to acknowledge information gaps when developing communications products.

While we recognize that people prefer certainty, your credibility may be damaged if you present information as definite when it is not. The early days of the COVID-19 pandemic exemplify how credibility can be damaged if the uncertainty surrounding a situation is inadequately acknowledged (Sandman 2021).

It is often assumed that communicating uncertainty will decrease trust in the messenger; however, more recent experience shows that people can understand uncertainty when it is communicated (Lyshol and Rolfheim-Bye 2021; van der Bles et al. 2020). Most importantly, when uncertainty is pointed out from the beginning, they do not appear to lose trust in the source. In some cases, their trust in the data may be reduced (van der Bles et al. 2020). This should not be a surprise, given high levels of uncertainty. Still, they will not stop trusting the messenger (you) so long as you are honest about the limitations of the data (Sandman 2021). Increased trust may even lead to higher receptiveness to the message (Lyshol and Rolfheim-Bye 2021).

### 3.2 Precaution Advocacy

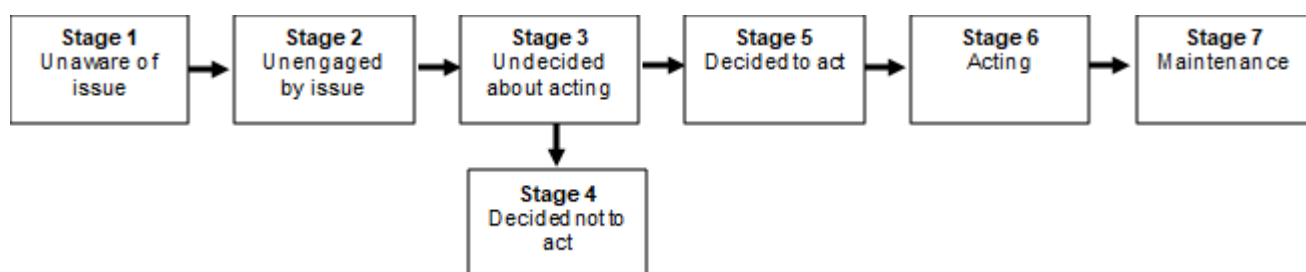
Depending on the situation, the CEC’s properties, and its priority (determined using the method described in the Identification of Key CEC Variables Fact Sheet), the risk communicator’s strategy will vary (Committee on Decision Making Under Uncertainty, Board on Population Health and Public Health Practice, and Institute of Medicine 2013). It may range from

educating internal or external stakeholders to providing guidance on how the public may protect themselves from potential harm. For low-priority CEC, the subject matter experts may be in the best position to take the lead. For high-priority CEC, more experienced risk communication professionals may need to be involved.

There may be limited goals or data for low-priority CEC, but as priorities increase, more information should be available to allow subject matter experts to determine potential harms and recommendations to avoid them. Although data will be limited, the risk communicator should focus on the data that are available, particularly data that indicate a potential for harm.

A useful tool is the Precaution Adoption Process Model (PAPM) (Figure 1). The PAPM describes a series of stages that people go through when deciding whether to take action of some sort and how that decision gets put into action (Meyer et al. 2023; Weinstein, Sandman, and Blalock 2020). These stages range from being unaware of the issue to action. Knowing where your audience is in the model's stages will help you tailor the message.

It is probably easier to move an audience in stage 1 (unaware) or 2 (unengaged) in the desired direction by providing them with basic education than someone who has already made a decision (stage 4 or 5). If someone has already decided to act, your work may be somewhat easier. Stages 5 or 6 may need only guidance, reminders, or other assistance (Weinstein, Sandman, and Blalock 2020).



**Figure 1. Stages of the Precaution Adoption Process Model**

*Source: Adapted and redrawn from Weinstein and colleagues (2008)*

### 3.3 Outrage Management

Depending on the overall situation, the CEC properties, and CEC priority, your strategy will vary. One major difficulty for the risk communication professional is the simple fact that if you feel the need to lower the level of outrage, your audience is probably past stages 1 or 2 of the PAPM. People who are already angry, concerned, or stressed have difficulty processing information (Covello, Minamyer, and Clayton 2007; Christine and Petersen 2007). They also tend toward distrust and worst-case thinking (Christine and Petersen 2007).

In a low-trust situation where the public is more inclined to trust bad news ("We're all going to die!") than good news ("You're unlikely to get sick."), the best advice is to recognize and acknowledge the bad news from the beginning (Covello, Minamyer, and Clayton 2007; Sandman 2012). While you may wish to bring your audience around to your view, it is vital to start where they are and not where you would like them to be. In addition, as pointed out above, uncertainty is a constant when communicating about CEC, and admitting that you do not have all the answers is key to maintaining credibility (e.g., Lyshol and Rolfheim-Bye 2021; Sandman 2021; van der Bles et al. 2020).

## 4. Some Best Practices in Risk Communication

The past several years have given us examples of chemical and biological contaminants that have come upon us seemingly out of nowhere. Public health and government risk communicators have had to discuss these CEC with little time to prepare or with minimal information upon which to base decisions. They have often been criticized for over-emphasis (Sandman 2021) and under-emphasis of potential risk (Ducatman et al. 2022).

Discussing a situation with little data and high potential consequences is a challenging situation. Four practices that should be kept in mind are discussed below.

### 4.1 Avoid One-Size-Fits-All Risk Communication

Your intended message should be tailored to your audience and your specific goal (e.g., Ricci 2012; University of Pittsburgh

2023). This includes the level of detail of the information being presented and matching the specifics about how the message is delivered with how the audience is prepared to receive it. The stage of the CEC life cycle will also inform how the message should be constructed to achieve your goal.

The tools and methods best suited to achieve the goal of educating the public to allow for more educated decisions when limited information is available will be very different from those needed to inspire the public to take immediate action to prevent illness (Zoller 2005). In turn, those tools will differ from those required to calm the public's fears when they are disproportionate to the risk (Sandman 2012).

## **4.2 Keep Your Audience Informed**

When dealing with CEC, it is vital to update the audience as frequently as possible. By their very nature, CEC are likely to have rapidly changing information. The main goal of most risk communication is to get accurate and timely information to the public (LaFraniere and Weiland 2022). Failure to keep abreast of rapidly changing information can lead to a loss of trust in public institutions (Ducatman et al. 2022).

## **4.3 Avoid Overconfidence**

Navigating between communicating frequent changes and trying to provide a consistent and understandable message can be difficult. It is important to project competence and trustworthiness in your communications (Gallo 2019), and there is a legitimate concern that frequent changes in the message make speakers look indecisive and incompetent. On the other hand, repeated confident assertions of fact that later turn out to be wrong can do tremendous damage to your credibility (Sandman 2021).

In most cases, the uncertainty about the risks of CEC is likely to be high. A confident and matter-of-fact tone when proclaiming the current (and very likely future) uncertainty will help with maintaining your credibility with the public (Sandman 2021; van der Bles et al. 2020).

## **4.4 Be Honest**

In some situations, the decisions the public will make based on the information being presented will be vital. It can be tempting to omit information, overstate your case, or outright lie to influence your audience to make what you view to be the "correct" decision. Our recommendation is not to give in to the temptation.

When trust in an institution is high, that institution may be tempted to stretch the truth, or worse. They may do so by intentionally lying, but it is more commonly done by providing incomplete or biased information to lead (or mislead) the audience to their preferred conclusion. Aside from being unethical (Ulmer and Sellnow 1997), these "noble lies" can damage or destroy your credibility (Parasidis and Fairchild 2022). If you have misread your audience, a single piece of evidence that you are not entirely truthful can convince them that your organization is incapable of telling the truth (Haidt 2012). And trust, once lost, is very difficult to regain.

# **5. Conclusion**

There are several challenges to consider when communicating risk associated with CEC. Recall that the purpose of risk communication is to help people make informed choices. In situations with CEC, however, people may be experiencing emotions ranging from apathy to fear, which affect their decision-making processes. Be thoughtful, proactive, and intentional when communicating. Consider not only the CEC priority level but also lessons learned and things to avoid when communicating. If you are not careful from the initial communication, it will become increasingly challenging to gain and/or regain trust—which may be to the community's detriment.

# **6. Available Resources**

More in-depth information and training on risk communication is provided in the following resources, which may be helpful.

### **United States Agency for Toxic Substances and Disease Registry (ATSDR) Communication Toolkit**

Provides tools to optimize communication efforts with local communities.

<https://www.atsdr.cdc.gov/communications-toolkit/index.html> (ATSDR 2018)

### **ATSDR Primer on Health Risk Communication**

Provides a framework of approaches for communication to diverse audiences with a focus on health communications by government agencies. <https://www.atsdr.cdc.gov/risk/riskprimer/index.html> (ATSDR 1994)

### **USEPA Risk Communication Tools Website**

Videos and case studies demonstrating the essential elements of risk communication.  
<https://www.epa.gov/risk-communication/> (OA USEPA 2023)

### **ITRC Risk Communication Toolkit**

This is the flagship risk communication guidance from the ITRC. <https://rct-1.itrcweb.org/> (ITRC 2020)

### **Peter M. Sandman Risk Communication Website**

Dr. Sandman is one of the pioneers of risk communication. Most of his knowledge and material can be found here, written and delivered in his unique down-to-earth style. <http://www.psandman.com/> (Sandman 2023)

### **World Health Organization Risk Communication Training**

A short but comprehensive course in risk communication with a focus on emergencies and disease outbreaks.  
<https://openwho.org/courses/risk-communication> (WHO 2023)

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