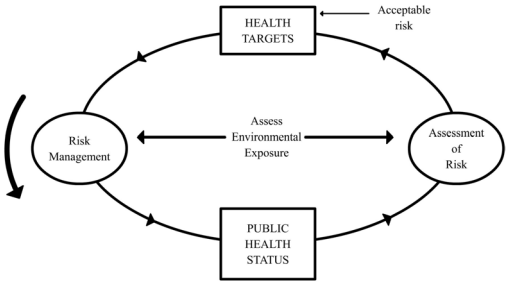

14

Risk communication

Sue Lang, Lorna Fewtrell and Jamie Bartram

There is an increasing number of factors affecting water supplies for which responsible agencies should have a risk communication programme in place. These factors might include chemical as well as microbiological hazards. In addition, there is a growing realisation that for risk communication to be effective it should be a continual and evolving process and not simply a crisis management measure.

This chapter considers some elements of effective risk communication that are applicable to the fields of recreational water and wastewater reuse as well as drinking water (from which most examples are drawn).

14.1 RISK COMMUNICATION

Risk communication is any purposeful exchange of information about risks between interested parties. More specifically in the context of this book, risk communication is the act of conveying or transmitting information between parties about a range of areas including:

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- levels of health or environmental risks
- the significance or meaning of health or environmental risks
- decisions, actions or policies aimed at managing or controlling health or environmental risks.

Interested parties include government, agencies, corporations and industry groups, unions, the media, scientists, professional organisations, interested groups, and individual citizens (Covello *et al*. 1991).

All too often it has been the case, with regard to policy making, that there was an emphasis on 'public misperceptions' with a tendency to treat all deviations from expert estimates as products of ignorance or stupidity (Bennett 1999), hardly an ideal basis for meaningful communication! Fortunately this stance is gradually changing, to acknowledge that public reactions to risk often have a rationality of their own, and that 'expert' and 'lay' perspectives should inform each other as part of a two-way process (Bennett 1999).

The necessity of the two-way process has been highlighted by the FAO/WHO:

> Ongoing reciprocal communication among all interested parties is an integral part of the risk management process. Risk communication is more than the dissemination of information, and a major function is the process by which information and opinion essential to effective risk management is incorporated into the decision. (Bennett and Calman 1999)

The days when it was possible to take a 'we know best' approach, simply informing the public that a risk has been identified, telling people not to worry, and stating what was intended to do about it, have in most cases long gone (Coles 1999). The public today no longer automatically acquiesce to authority and now demand a greater role in decision-making (McKechnie and Davies 1999). This, while opening up a route for better decision-making and stakeholder involvement, is no small undertaking and involves some major challenges (McCallum and Anderson 1991), including:

- Provision of information when science is uncertain.
- Explanation of the risk assessment process.
- Incorporation of the differing ways that various groups interpret the science into risk communication strategies.
- Accounting for differing concepts of an 'acceptable' level of risk.
- Provision of information that assists in personal decisions and informs opinions on policy.
- In terms of incident management, maximising appropriate public responses and minimising inappropriate public responses.

It is no accident that risk management, which was traditionally depicted as a linear process, is now generally viewed as a cyclic process with risk communication at its heart (Figure 14.1).

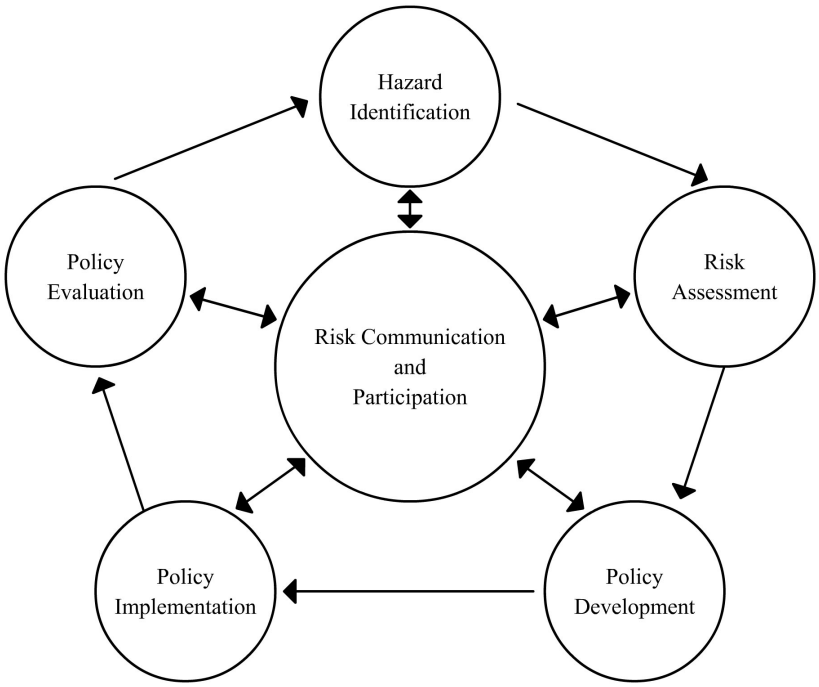

Figure 14.1. The risk management cycle (adapted from Chorus and Bartram 1999).

Responsible water management agencies should adopt a risk management philosophy through which the relevant agency is able to preserve its shareholder value, reputation and credibility, and market share (if appropriate) in the event of a health or environmental risk. An essential component of this philosophy is a risk audit process, which will assist to identify likely issues requiring risk communication strategies, with the central circle of Figure 14.1 being made up of numerous different audiences.

There are a number of functions that a risk communication programme might seek to fulfil (Renn and Levine 1991) including:

- Enlightenment role (aiming to improve risk understanding among target groups).
- Right-to-know (designed to disclose information about hazards to those who may be exposed).
- Attitude modification role (to legitimise risk-related decisions, to improve the acceptance of a specific risk source, or to challenge such decisions and reject specific risk sources).
- Legitimate function (to explain and justify risk management routines with a view to enhancing the trust in the competence and fairness of the management process).
- Risk reduction role (to enhance public protection through information about individual risk reduction measures).
- Behavioural change role (to encourage protective behaviour or supportive actions towards the communicating agency).
- Emergency readiness role (to provide guidelines or behavioural advice for emergency situations).
- Public involvement role (aiming at educating decision-makers about public concerns and perceptions).
- Participation role (to assist in reconciling conflicts about risk-related controversies).

Clearly, given these different possibilities it is important to have a defined objective (what is the aim of the risk communication?) before proceeding. As noted by Corvello (1998), however, the overall goal of risk communication should not be to diffuse public concerns but should be to produce an informed public that is involved, interested, reasonable, thoughtful, solution-orientated and collaborative.

A key consideration of risk communication is that the target will rarely be a single audience, but usually a variety of audiences, and as such messages must be tailored to consider the different audiences that are likely to have different interests, values, levels of intelligence, education and understanding. Audience types might include water consumers (which will encompass the old, young, mothers etc.), water-sports enthusiasts, shareholders, environmental groups, businesses using water, special needs consumers, hospitals and nursing homes, politicians, policy makers and so on.

Risk communication should not be restricted to negative messages and warnings but should include positive ‘educational messages’. Whatever the topic, preparation is the key, as illustrated by the following list which attempts to characterise a local community in a developing country before putting out messages about the positive benefits of increased personal hygiene (WHO 1997). Determine:

- Local beliefs and attitudes regarding water, sanitation and health.
- Traditional water use and defecation habits and excreta disposal practices.
- Current levels of knowledge about disease transmission, especially among community leaders and other influential individuals.
- The priority given to improvements in water supply and sanitation in relation to other community needs.
- Existing channels of communication in the community including books, newspapers, and magazines, radio or television, tradition drama, songs and story-telling.
- Members of the community and field workers from other agencies who might be involved in spreading a similar message.

Such preparation will result in a far higher success rate as it will be more likely to engage the target audience in an appropriate and informed manner.

14.2 SITUATION MANAGEMENT

As disclosure and freedom of information laws are more common in many parts of the world, responsible agencies are increasingly focusing on how to communicate risk. At what point is the decision taken to make the public aware that there is an issue?

The responsible agency's risk management philosophy will, in some measure, dictate at what point the issue will be raised. The decision may relate to possibility/potential, combined with non-scientific evidence and field expertise in the absence of scientific evidence. Where the lines are unclear, independent advice may be sought from health departments (Chief Health Officer) or a scientific expert. As risks to health and the environment cannot be eliminated, value judgements are required.

A good risk communication programme will ensure that factual information is provided quickly, through an authoritative, accessible source with a clear, understandable message. Research has shown that organisations with strong relationships with key stakeholders will benefit from those relationships during a crisis. As crises magnify poor or non-existent relationships, investment in pre-crisis communications is a cost-effective strategy to minimise damage to an organisation during a crisis. Marra (1998) notes that six characteristics appear consistently in management and communication literature as a measure of a relationship:

(1) Trust
(2) Understanding
(3) Credibility
(4) Satisfaction
(5) Co-operation
(6) Agreement.

It is therefore important to have a crisis communications plan in place as a part of any organisation's risk communication programme. This allows accurate information to be provided in a timely fashion if an issue arises. A lack of available information leads to conjecture and seeking of information from less credible sources. Misinformation becomes news. Additionally, crisis conditions almost always reduce the likelihood of effective decision making, having effective procedures in place in advance should alleviate this problem (at least to some degree). Pre-planning should also reduce internal co-ordination problems and the possibility of confusing and contradictory messages which, unsurprisingly, can lead to external credibility problems.

Speedy provision of information and explanations that go beyond the basic information in media stories are likely to be viewed as an attempt to be open and address the situation. This is critical if the organisation is to maintain credibility and trust which is paramount in health-related issues. Examples of water-related issues include:

- Outbreak of illness linked to drinking water
- Microbiological contamination of bathing water
- Urban pollution (stormwater, sewage) of beaches
- Vegetables contaminated through irrigation with wastewater.

There are indications in some countries that media coverage of technical issues, including water, has become increasingly negative over the last 20 years, while objective indicators show either an improvement or no decline in quality. This increasing negativity may well be due to the perceived proliferation of health and environmental hazards resulting from new technologies (e.g. genetic modification of food) coupled with a corresponding push by lobby groups to focus on the possible impacts of these technologies. There has also been a feeling, for example within the UK, that the responsible agencies would sooner keep the public in the dark, or are too quick to provide unsupportable reassurances leading to a lack of trust, decreased credibility and an 'expect the worst' public attitude.

As media portrayals can have a significant impact on public attitudes, it makes sense to attempt to include the media as an ally in communication, rather than an audience. This can be done through invitations to the media to assist in conveying warnings and instructions to target audiences, reassuring the public, defusing inaccurate rumours, assisting in the response effort and soliciting assistance from the public as required. However, this may not always be possible, in which case it may be helpful to have an eye on a number of media 'triggers' (Table 14.1).

Table 14.1. Media triggers (adapted from Bennett 1999)

Triggers
A possible risk to public health is more likely to become a major story if the following are prominent or can readily be made to become so:
1 Questions of blame
2 Alleged secrets and attempted cover-ups
3 Human interest through identifiable heroes, villains, dupes etc. (as well as victims)
4 Links with existing high-profile issues or personalities
5 Conflict
6 Signal value: the story as a portent of further ills ('*what next*?')
7 Many people exposed to the risk, even if at low levels ('*it could be you*!')
8 Strong visual impact (e.g. pictures of suffering)
9 Links to sex and/or crime

With the possible exception of links to sex, it is not too difficult to imagine water-related scenarios that could hit all of these triggers!

14.2.1 Audience-focused communication

Once it is determined that public communication about a water quality issue is necessary, an audience-centred approach to communicating that risk is vital. According to Maibach and Parrott (1995), an individual's risk experiences and perceptions can affect their risk-related worry and eventual seeking of further information.

Predetermination of specific audiences requiring specially crafted messages can be extremely useful. It is helpful if health messages are designed to respond to the needs and situation of the target audience, rather than those of the responsible agency. It is suggested that a useful approach is to identify likely target audiences (e.g. families with young children, food processing businesses, dialysis patients, hospitals and nursing homes, water-sports enthusiasts), and be familiar with their preferred method of information extraction. The preparation of material in advance to address specific audience needs is of value in terms of being able to provide a rapid response.

It is important to bear in mind, however, that risk communication may work selectively, and often reaches those who are already better informed (Langford *et al*. 1999). This can be illustrated by a survey examining willingness to pay for clean bathing water (Georgiou *et al*. 1998). In this study attitudes regarding clean bathing water were canvassed among locals, day-trippers and holiday-makers at two sites, Lowestoft and Great Yarmouth in eastern England. Lowestoft has a beach that regularly passes the EC bathing water directive, while the beach at Great Yarmouth does not. In Lowestoft, 61% of people canvassed knew of its 'clean beach' status, i.e. people were well informed and many day-trippers had chosen the resort because of its clean beach. By contrast, only 12% of survey respondents at Great Yarmouth were aware that the beach failed to meet EC standards. Interestingly, those who actually bathed at Great Yarmouth had a significantly lower willingness to pay for improved water quality than those who didn't bathe, suggesting that bathers at Great Yarmouth were denying there was a possible health threat and just wanted to get on with their holiday! This study, therefore, also illustrates the problem of 'optimistic bias' or 'unreal optimism' (Weinstein 1980), where people tend to believe they are less at risk from a given hazard relative to an 'average' member of society.

14.2.2 Managing negative feedback and outrage

Risk communication experts in the US and Europe point to a risk comparison approach in determining the risk perception and evaluation. Sandman *et al*. (1993) points out that *outrage* (the relationship between the agency and the neighbourhood) affects the perceived seriousness of the situation by a factor of five relative to the 'actual' seriousness. He concludes that when people are outraged, they tend to think that the hazard is serious. Therefore, it is important to look at the factors which affect risk perception and evaluation and are thus likely to affect public concern (Table 14.2).

Given that a number of factors relating to water quality are likely to fall into the 'increase public concern' category, attempts to be trustworthy and to make the message understandable are likely to be well-received. The key is to control the message, not the messengers. As mentioned earlier, it is useful to provide all possible alternative information sources with the relevant simple facts and analogies. An invitation to include members of the public on advisory/consultative committees is also likely to gain favour and demonstrate openness.

Table 14.2. Risk perception (adapted from Covello 1998)

Factor	Increase public concern	Decrease public concern
Catastrophic potential	Fatalities and injuries grouped in time and space	Fatalities and injuries scattered and random
Controllability (personal)	Uncontrollable	Controllable
Manifestation of effects	Delayed effects	Immediate effects
Effects on children	Children specifically at risk	Children not specifically at risk
Familiarity	Unfamiliar	Familiar
Media attention	Much media attention	Little media attention
Origin	Caused by human actions or failures	Caused by 'Acts of God'
Reversibility	Effects irreversible	Effects reversible
Trust in institutions	Lack of trust in responsible institutions	Trust in responsible institutions
Uncertainty	Risks unknown	Risks known
Understanding	Mechanisms or processes not understood	Mechanisms and processes understood
Voluntariness of exposure	Involuntary	Voluntary

14.2.3 Anticipating concerns

Clearly, as part of the preparation process it is useful to be able to anticipate audience concerns. There are a number of approaches that can be taken to determine likely response:

- Researching the concerns raised in similar situations within your particular country if available (different cultures and societies are likely to have different concerns);
- Market research in the form of focus groups to determine the concerns of specific audience segments; and
- Monitoring throughout an active issue to ensure ongoing needs assessment – are there unanticipated audiences that require information? Are different issues arising within a recognised audience?

14.2.4 The choice of messenger – who people trust

Studies show that people, in general, get more information about risk and hazard from the media than from their own doctors, friends or relatives (Shaw 1994). Various polls taken in the US indicate that the public overwhelmingly relies on the mass media for information from which they will form their

attitudes on water supply and health risks (Geldreich 1996). If this is taken to be the case, then the importance of using the media as an ally, rather than an audience, is even more pronounced.

A study conducted in the UK by the Consumers' Association (McKechnie and Davies 1999) surveyed over 2000 adults about whom they considered to be trustworthy sources of impartial advice (Table 14.3).

Table 14.3. Trusted sources of impartial advice in the UK (adapted from McKechnie and Davies 1999)

Source	Most trustworthy (%)	Least trustworthy (%)
Health professionals (e.g. GPs, health visitors)	36	3
Consumer organisations (e.g. National Consumer Council, Consumers' Association)	27	4
Scientists specialising in food safety	20	5
Government departments	5	49
The food industry	5	30

Although the survey had a food bias, the results make interesting reading. These estimates are unlikely to be static and will probably vary according to current news stories and other factors.

14.3 LONG-TERM TRUST

Although this chapter has largely been aimed at risk communication during situation management, many of the messages will be the same whether the risk communication is part of an ongoing process or a crisis situation. However, long-term trust is clearly an area that cannot be put in place in the context of situation management but, nonetheless, is likely to play an important role should a crisis occur. It is wise, therefore, to build a 'reservoir of goodwill' against which to 'borrow' if necessary. Although confidence and trust comprise goodwill and are often used interchangeably, confidence in a source can be distinguished as an enduring experience of trustworthiness over time. Trust can be broken down into perceived competence, objectivity, fairness, consistency and faith. Confidence is based on a good past record of trust-building communication (Kasperson and Stallen 1991).

People are unlikely to change their behaviour or attitudes if they distrust the source of risk information. Lack of credibility is often linked to incompetence, poor performance, incomplete or dishonest information, withholding of

information, obscure or hidden decision-making processes, denial of obvious problems and denial of vested interests.

Credibility, however, can be reinforced by good performance, fast responses to public requests for information, consonance with highly esteemed social values, availability for communication with outsiders, unequivocal and highly focused information transfer, flexibility to respond to crisis situations or new public demands, and demonstration of public control over performance and money allocation. Overreacting to public requests for information never hurts.

14.4 COMMUNICATION TECHNIQUES

The amount of effort people use to process a message is important as it can affect what they remember, their attitudes, and their intent to comply with the message. Monahan (1995) concludes that negative messages foster the use of more elaborate, detail-oriented and analytical processing strategies, informing the audience that the current situation is problematic. Positively phrased messages inform the audience that the current situation is non-threatening and that a higher degree of attention is unnecessary. According to Holtgrave *et al*. (1995), arbitrary choices of wording can have a profound impact in terms of the decisions and behaviours they elicit from the audience.

There are seven key aspects to consider when communicating to an audience (Cutlip *et al*. 1985), namely:

(1) Credibility. The audience must have confidence in the agency and high regard for the agency's competence on the subject.
(2) Context. The communications programme must acknowledge the realities of its environment. The context must confirm, not contradict, the message. Effective communications require a supportive social environment, one largely set by the news media – hence the importance of using the media as a communication ally.
(3) Content. The message must have meaning for the audience and compatibility with the audience's value system. It should have relevance to the audience's situation. In general, people select the elements of the information that promise them the most reward. The content determines the audience.
(4) Clarity. Simple terms are most appropriate and it is important to ensure that the message means the same to the audience as it does to the communicating agency. Complex issues should be compressed into themes, analogies or stereotypes that are clear and simple. The further a message has to travel, the simpler it must be.

(5) Continuity and consistency. Communication requires repetition to achieve penetration. Repetition, with variation, contributes to both factual and attitudinal learning. The story should be consistent.
(6) Channels. Established channels that the audience uses and respects should be utilised. Different channels are required to reach different target audiences. People associate specific values with specific channels of communication, and this, too, should be kept in mind.
(7) Capability of audience. The capability of the audience should be addressed. Communications are most effective when they require the least effort on the part of the audience. This involves factors of availability, habits, reading ability and audience knowledge.

14.4.1 Empathy

There is no disadvantage in expressing concern and a willingness to take responsibility to address/rectify the situation. Indeed, it is likely to be a vital prerequisite to effective risk communication, especially if dealing with an outraged audience.

Another factor to consider is that any message that is heavily science-based is likely to be a barrier to public understanding and engagement. This, coupled with delivery of scientific results, which tend to be couched in dry unemotional language, is likely to alienate the audience with scientists coming across as distant and uncaring (Burke 1999).

14.4.2 Uncertainty

This area was raised earlier in the chapter as a major challenge (see Chapter 9), and while it may be difficult to acknowledge uncertainty (and indeed may go against demands for certainty from the public and policy-makers alike) failure to do so is likely to lead to greater problems in the long term (Bennett *et al*. 1999). In many countries, the public has become tired of false reassurances of safety and decisions presented as being conclusive when this is far from the case (McKechnie and Davies 1999). Such proclamations will drain trust as it becomes clear that the situation wasn't as cut and dried as originally presented. A related issue is that of presenting evidence: scientists will reject suggested causal links for which there is no positive evidence; however, the public will require strong proof against a link that looks intuitively plausible (Bennett *et al*. 1999). It has been suggested that '*there is no evidence that X causes a risk of Y*' be abandoned and the following, more constructive, approach be adopted:

(1) Acknowledge the initial plausibility of the link.
(2) Explain what evidence would be expected if such a link existed.
(3) Show that serious, well-conducted investigation has not found such evidence.

As Bennett *et al*. (1999) point out, if (2) or (3) cannot be provided, then 'no evidence' is a dubious reassurance!

14.4.3 Silence

If an organisation fails to communicate a risk issue (i.e. it is silent) the public are quick to judge that the organisation (or representative individuals) either doesn't have the requisite knowledge or information, is guilty and trying to 'cover-up', or is just plain arrogant, or possibly a combination of all three. If there is little information available, it is preferable to indicate what information is known and when further information is expected to be available.

14.5 EVALUATION

In any risk communication approach, especially in terms of crisis management, evaluation is important, both as part of the two-way process and checking assumptions about audiences. O'Donnell *et al*. (2000) recently examined the effectiveness of a 'boil water notice' issued in response to a drinking water pollution incident. The notice was issued to 878 households following possible sewage contamination of drinking water supplies. The notice was brightly coloured, included a telephone helpline number and provided the following simple advice (translated into several languages on the back of the notice):

- Boil water before use.
- Do not drink your tap water without first bringing it to the boil and letting it cool.
- Do not use unboiled water for preparing food, cleaning your teeth, or washing wounds.
- Remember your pets – they should not drink unboiled water either.
- You can still use tap water for washing and bathing without having to boil it.
- You can still use tap water for general household purposes and toilet flushing.

O'Donnell and her colleagues canvassed 350, randomly selected households by postal questionnaire about risk behaviour in light of the notice. Despite timely delivery of the notice, and the general feeling that the notice was easy to understand, 81% of households surveyed engaged in behaviour likely to increase the risk of waterborne infection. Most respondents said that they would appreciate more information about the nature of the incident and a description of possible health effects. More day-by-day information on the state of repairs and likelihood of the notice being lifted was also considered desirable.

14.6 RISK COMMUNICATION AND GUIDELINES

Risk communication plays an important role in the guidelines approach. WHO's water-related normative work attempts to provide a scientific basis to support individual countries in developing national (or potentially local or regional) risk management strategies – including the development of standards. The emphasis on providing a common worldwide scientific underpinning requires that the guidelines are orientated specifically towards health hazards and that aspects likely to vary widely between countries and regions are generally unsuitable for direct inclusion. For this reason the outputs are referred to as guidelines rather than standards to reflect the fact that they are intended to be adapted by countries to reflect their social/cultural, economic and environmental circumstances. The Guidelines for Drinking-water Quality (WHO 1993), for example, specifically advocate that a risk-benefit approach be adopted in developing overall strategy.

Figure 14.1 illustrates that risk communication is a circular process requiring two-way communication at all stages. As such the 'scientific' and 'rational' elements (which are typically the domain of environmental health administrations) cannot be isolated from other elements. WHO guidelines, therefore, typically recognise that factors such as societal values vary widely between cultures and therefore specific approaches and indeed standards themselves may vary between countries and cultures. This was one of the reasons behind the change from the earlier WHO 'International Standards for Drinking-water Quality' to 'Guidelines for Drinking-water Quality'.

The guidelines, however, are not limited to simple descriptions of what is safe in terms of the composition of water suitable for different purposes. Some (such as the Guidelines for Safe Use of Wastewater and Excreta in Agriculture and Aquaculture) place considerable emphasis on good practice, i.e. practices that would tend to prevent exposures that would be hazardous to human health. Most, either implicitly or explicitly, recognise the importance of individual behaviours in risk avoidance and, therefore, the need for an educated public

provided with timely and appropriate information to enable them to interpret and act upon information available to them (from whatever source).

The area of risk communication is developing rapidly and, at present, there are great disparities across countries and regions in policy and practice. At the country level developments are likely to be influenced by parallel developments in the field of human rights and in relational to international trade. In the former, slow steps have been made towards the recognition of water and sanitation as 'human needs' and they are implicit as 'human rights' in a number of legal instruments. In the latter the involvement of international companies in service provision may lead to increasing pressure towards internal standardisation.

A risk communication strategy is very important in the process of adapting international guidelines to national policy. Regulators tend to be defensive and, thus, tend to exclude the public. This is the opposite of what is required and tends to be counterproductive. Engaging in risk communication creates an aware and informed public who should be allowed to have the right sort of input to the regulatory process.

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