



Communicating public health risks associated with the maritime transportation of hazardous substances

January 2013



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Executive summary

Significant quantities of some 2,000 different chemicals are regularly transported around the world by sea. The continuing rising trend in maritime transportation of hazardous substances brings with it an increased potential for accidents. These accidents may result in actual or perceived public health and environmental consequences.

Some risks can be identified, assessed and managed to mitigate against the likelihood of an incident occurring. Indeed, there are stringent legislative tools pertaining to the transportation of hazardous substances by sea. However, accidents *can and do* occur and may result in land-based community exposures with associated actual or perceived public health concerns, as well as ecological and environmental impact. Such exposures may not just involve single chemicals but mixtures, which presents a new toxicological challenge as the behaviour of the new compounds may differ from the behaviour of the original chemicals, adding to the difficulty of assessing exposures and associated risks to population health and environmental impact.

Having a mechanism in place to facilitate effective communication of public health risks (both proactive and reactive in nature) is therefore an essential component of emergency planning, preparedness and response responsibilities. Given that communicating risks can be complex, any framework underpinning risk communication activities must be supported by a robust risk assessment and a sound understanding of the target audience, its makeup and level of knowledge.

This document provides a framework that supports the proactive and reactive communication of public health risks. Proactive communications are those where there is time to consider and plan for foreseeable problems, whereas reactive communications refer to advice given in response to incidents to minimise risks and adverse public health impacts.

The appendices contained at the end of this document are designed to assist organisations in the event of a maritime incident where reactive communication is necessary. The appendices require adaptation and alignment to each organisation using them. This document does not stand alone it is part of a suite of documents - produced for the ARCOPOL⁺ project.

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Background

This work has been undertaken by Public Health Wales in conjunction with the Health Protection Agency and Pembrokeshire County Council as part of ARCOPOL⁺ (www.arcopol.eu). This is a project framed in the Atlantic Area Transnational Programme that aims to reinforce the preparedness and response to oil and hazardous and noxious substance (HNS) spills in Atlantic regions through technology transfer, training and innovation. The project represents the continuation of ARCOPOL (Atlantic Region Coastal Pollution Response project) involving contributions from EU Atlantic Countries, Spain, Portugal, France, Ireland and the UK. Development of such processes contributes to preparedness, capacity building and resilience in accordance with International Health Regulations enabling international application and thus maximising potential to assist in resource planning and response to major incidents.

Aim and objectives

Aim:

To provide a framework to support the proactive and reactive communication of public health risks associated with incidents involving the maritime transportation of hazardous substances.

Objectives:

- To describe the role of risk communication in the context of wider emergency planning legislation responsibilities
- To contextualise the role that effective risk communication plays in the wider assessment and management of risk;
- To explore differences in, and influences on, perceptions of risk
- To characterise proactive and reactive risk communications and their respective benefits in emergency planning, preparedness and response activities
- To consider when to communicate risk, what should be communicated and how;
- To provide a useful tool to evaluate the effectiveness of risk communication activities
- To provide useful examples of risk communications material

Introduction

Before any communication strategy can be established it is necessary to identify potential hazards, and undertake suitable risk assessment and risk prioritisation. This will then allow mitigation and control measures to be established, including preparation of suitable communication processes both for pro-active engagement and in the event of an incident occurring.

Key definitions: (Ref <http://www.hse.gov.uk/risk/faq.htm>)

Hazard –A hazard is anything with that may cause harm.

Risk –Risk is the chance, high or low, of somebody being harmed by the hazard and how serious the harm could be.

Mathematically, risk may be expressed as:

Risk = severity of hazard x probability of exposure

The risk assessment paradigm is classically divided into 4 major steps, namely: hazard identification, dose response (i.e. the effects at different levels of exposure), exposure assessment of affected persons/environments, and risk characterisation. (WHO 2009)

Details of how assessments can be undertaken are available from a range of organisations including WHO, United States Environmental Protection Agency, European Maritime Safety Agency and European Chemical Agency, whilst training is delivered via a range of learning providers.

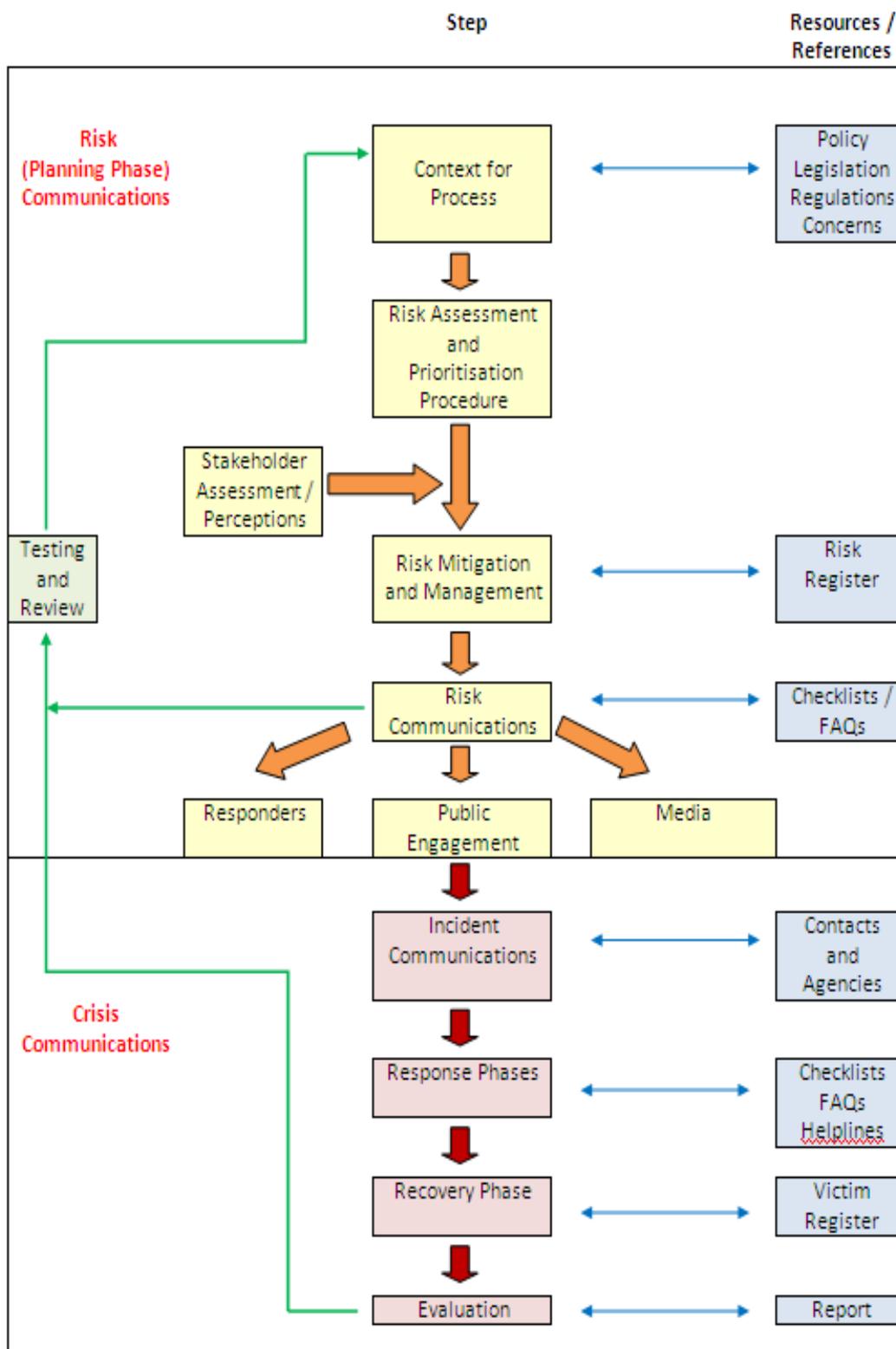
Following risk characterisation, risks can be prioritised enabling focused provision of resources to optimise risk mitigation, management and control. Prioritisation is further discussed in the Planning and Preparedness section of this document.

Throughout this process it is important to involve all stakeholders including those who may provide the hazard, such as local shipping operators or industrial partners, those who are involved in regulating and responding to such activities, and those who may be affected such as local communities, businesses and environmental receptors.

The risk communications process is illustrated in Figure 1 overleaf:

Figure1:

Example of Risk Communications Process Flow Chart

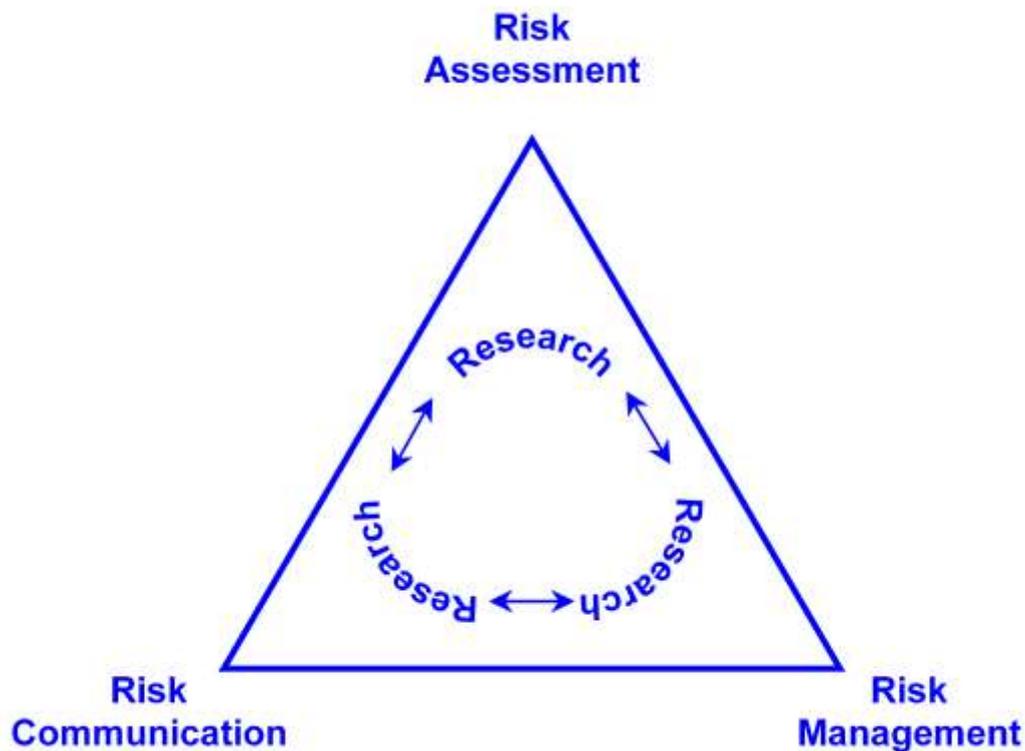


Whereas risk assessment includes determining what risks are present, what their consequences are, and what the probabilities are of their

occurrence, risk communication is concerned with how information about risk is conveyed to the different people, agencies and communities that need to know.

Understanding 'risk' consists of understanding risk assessment, risk communication and risk management as part of a simultaneous process as depicted by the risk triangle below;

Figure 2: The Risk Triangle



The processes of risk assessment, communication and management can relate to those circumstances that can be reasonably foreseen and prepared for, and also to those which cannot and have to be responded to reactively. The two are not mutually exclusive, with pre-planning and relationship building allowing an organisation to establish trust and respect which can be called upon in times of an incident or emergency.

Public health agencies, often in line with statutory emergency planning and response responsibilities, must plan and prepare for, and respond to, chemical incidents. Effective communication (with other professionals and non-professionals alike) is a key component of these responsibilities. In addition, public health agencies can use risk communication tools to inform post-incident epidemiological follow up, by identifying 'at risk' population groups that can be monitored to determine medium to long term health implications.

Communication is a two-way process and often not an isolated event. It takes time and effort to carefully develop and relay important messages, address concerns and build trust. Time and effort invested in the proactive planning and preparedness phase (risk communication), helps to identify and open communication channels, builds trust and thus lays foundations for effective reactive communication (crisis communication). Risk and crisis communication may be necessary in isolation or in conjunction with one another with one dependant on the other.

Effective risk communication requires:

- a commitment to openness and acceptance of the need to share uncertainty;
- a familiarity with risk language;
- an understanding of risk perception;
- a recognition of the benefit of continually learning from experience.

Context (policy & legislation)

Whilst this document primarily focuses on risk communication in respect of public health protection in the event of a maritime shoreline incident, the principals involved can be equally applied to risk communications in respect of environmental impact.

Emergency planning-related legislation aims to establish a consistent level of civil protection across the European Union. Legislation places a legal obligation upon public sector organisations in relation to contingency planning and emergency response. In broad terms, these duties require organisations to assess the risk of an emergency occurring, to maintain plans to respond to an emergency, to publish the assessments and plans in so far as this is necessary or desirable to deal with an emergency, and to maintain arrangements to warn, inform and advise members of the public in the event of an emergency.

Maritime incidents by their very nature may have high profile local and wider impacts and as such may additionally need to be notified under the International Health Regulations (WHO, 2009)

Maritime law

European maritime legislation is based upon international conventions developed by the International Maritime Organisation (IMO) and incorporated within the European Third Maritime Safety Package. This includes directives on all aspects of maritime transport. Adopted conventions from IMO include Safety of Life at Sea (SOLAS) and the International Convention on the Prevention of Pollution from Ships (MARPOL) (<http://www.imo.org/>). MARPOL provides details on oil, liquids and packaged goods and provides classifications based upon harmful effects to human health and the marine environment. The conventions have developed labelling and classification systems including the IMDG International Maritime Dangerous Goods for packaged goods, as well as codes for bulk liquids (IBC numbers), gases (ICG) and solids (BC).

Additional international conventions recently developed include the Protocol on Preparedness, Response and Co-ordination to Pollution Incidents from Hazardous and Noxious Substances (OPRC-HNS Protocol 2000), which places requirements for provision of resources and expertise to respond to incidents involving HNS, as well as procedures for compensation. Whilst, such conventions are voluntary, they place requirements on signatories to suitably prepare and resource for incidents, requiring preparation of national, regional and local plans. Additional policing and regulatory support is provided by multinational organisations such as the European Maritime Safety Agency (EMSA) who offer assistance with response to maritime pollution.

Risks and perceptions

As outlined in the introduction section, a hazard is something with the potential to cause harm, whilst a risk takes into account the severity and likelihood of that harm. Generally, risk perceptions are subjective assessments made by individuals or groups about risks and how they may affect them.

There can be tensions between expert assessments of risk on the one hand and public perceptions of risk on the other. Risk perceptions are shaped by personal opinions about a given risk, interpretation of communications received about it and the views of friends, family and other social networks they are a part of. Underlying social value systems are likely to have as strong an influence on public risk perception as the expertly measured physical properties of risks, hazards or events. Public perception does not always tally with science but reassurance is still needed. (Ayres et al 2010)

There is often scientific uncertainty in the measurement of risk as risks may arise through multiple pathways and have synergistic effects posing difficulties for surveillance and monitoring. Hazard and risk exposure assessments are compromised by problems associated with establishing robust dose-response relationships and thresholds of harm and some risks may arise from a point source whereas some are diffuse. There can also be large spatial differences and a time lag between cause and effect which can exacerbate uncertainty.

Perceptions are as important as reality. It is therefore important that public health agencies seek to understand and consider public perceptions of

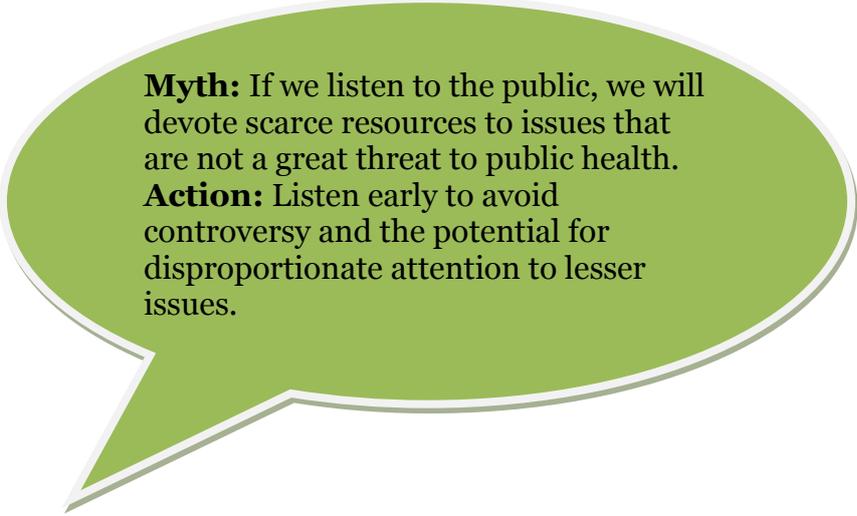
Factors Influencing Risk Perception (Fischhoff *et al.* 1981)

People's perceptions of the magnitude of risk are influenced by factors other than numerical data.

- Risks perceived to be voluntary are more accepted than risks perceived to be imposed.
- Risks perceived to be under an individual's control are more accepted than risks perceived to be controlled by others.
- Risks perceived to have clear benefits are more accepted than risks perceived to have little or no benefit.
- Risks perceived to be fairly distributed are more accepted than risks perceived to be unfairly distributed.
- Risks perceived to be natural are more accepted than risks perceived to be manmade.
- Risks perceived to be statistical are more accepted than risks perceived to be catastrophic.
- Risks perceived to be generated by a trusted source are more accepted than risks perceived to be generated by an untrusted source.
- Risks perceived to be familiar are more accepted than risks perceived to be exotic.
- Risks perceived to affect adults are more accepted than risks perceived to affect children.

environment and health-related concerns. Public risk perceptions are affected by whether a risk is voluntary or involuntary, its impacts affect society at large or are individualised, and whether or not those affected have previous experience of dealing with the risk in question.

Risk perceptions are constantly being modified in the light of new information. Members of the public may not understand the complexities of risk research but public understanding of, and response to risks may be rationally based on judgements of the behaviour and perceived trustworthiness of the expert institutions communicating the risks. The same risk will be perceived differently by different people due to socio-demographic factors or contextual factors irrespective of the objective statistical assessment of risk.



Myth: If we listen to the public, we will devote scarce resources to issues that are not a great threat to public health.
Action: Listen early to avoid controversy and the potential for disproportionate attention to lesser issues.

For example, the public perception of risk from maritime incidents is typically portrayed as blackened shorelines and oil covered fish and wildlife. Whilst this is perfectly reasonable, the perception of other equally hazardous but less visible chemicals may be lessened as their physical effects are less obvious. In contrast, mention of chemicals causing cancer can often heighten perception of danger, regardless of likelihood of exposure.

The exchange of risk information between public health practitioners and affected parties is frequently hampered by differences in the understanding of interpretation of many words and phrases. Standard, understandable terminology should be used wherever possible.

Risk and Crisis Communication

There are two distinct phases of communicating public health risks associated with the maritime transportation of hazardous substances; They are categorised by the World Health Organisation (WHO 2009) as Risk Communication and Crisis Communication. Risk communication is associated with planning and preparedness and crisis communication with incident response. Both phases; Planning and preparedness (Risk Communication) and Incident Response (Crisis Communication) will be addressed in the following sections.

Planning and preparedness

Risk communication refers to communication about possible incident scenarios. It includes all pre-incident communication. This may include information on hazards in the vicinity, possible incident scenarios, preparedness by the authorities, protective actions that the public can take if an incident occurs and establishment of a communication channel. Such steps are particularly appropriate where shipping is frequent e.g. ports, terminals etc.

Risk communication builds trust between potentially affected population, emergency planners and responders and public health professionals. As such it lays the foundations for effective crisis communication.

In the preparedness stage, a system for crisis communication can be designed, as knowing what the risks are and identifying possible incident scenarios can lead to a pre-agreed communication strategy for example, the public knowing what to do if an alarm sounds at a land-based chemical processing facility indicating a release of a hazardous substance.

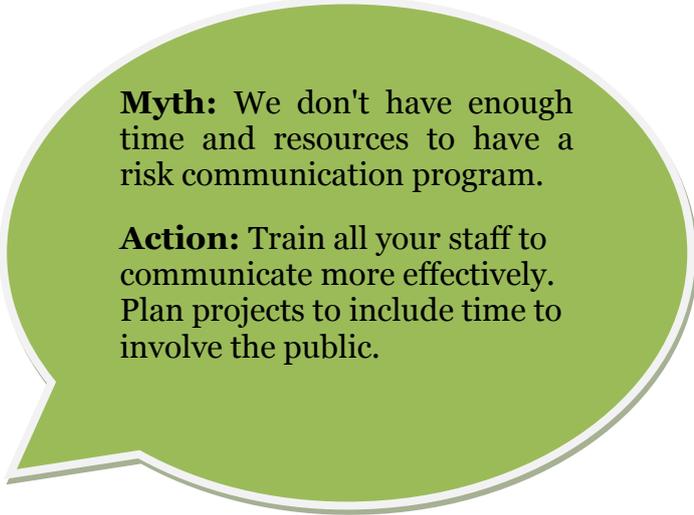
In order to prepare pro-active risk and crisis communication, it is necessary to initially undertake some level of hazard identification and prioritisation. In addition to well established methods of risk assessment,

To the extent possible, involve the community in the decision-making process.

- Involve the community at the earliest stage possible.
- Clarify the public's role from the outset.
- Acknowledge situations where the agency can give the community only limited power in decision making.
- Find out from the communities what type of involvement they prefer.

such as those prescribed by the World Health Organisation and that developed by the Global Health Security Action Group (GHSAG), a simple semi quantitative tool was developed for maritime incidents as part of the ARCOPOL project. This tool prioritises health risks from hazardous chemicals based upon their acute chemical toxicity, behaviour, reactivity and the amounts transported for a specific region / country. Use of such systems can assist in focussing messages and resources to those chemicals and incidents with the highest risk of occurrence.

Early engagement with partner agencies and the community in developing plans is recommended if an assessment of the hazard or risk determines probable community engagement at a later stage. The process of preparing together promotes more efficient arrangements for working together but plans need to be reviewed regularly and flexibility needs to be built in.



Myth: We don't have enough time and resources to have a risk communication program.

Action: Train all your staff to communicate more effectively. Plan projects to include time to involve the public.

Incident response

Crisis communication refers to communication about actual or potential risk during an incident. Crisis communication is an extremely important tool in enabling the response agencies and public officials to mitigate the consequences of an incident.

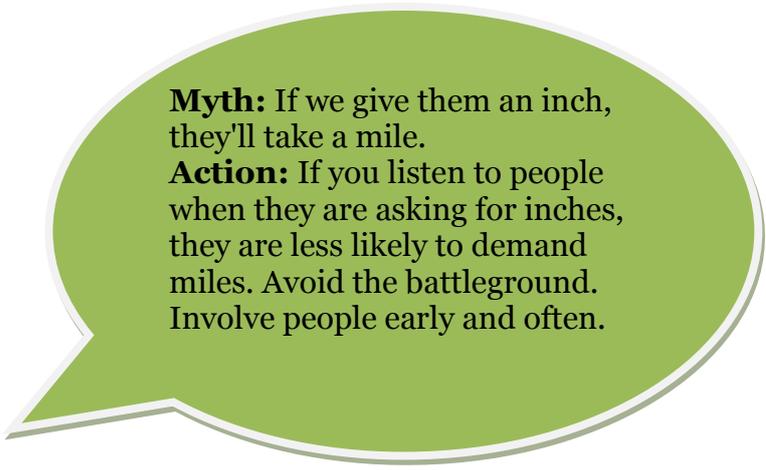
The cornerstones of effective risk and crisis communication are speed, openness, transparency and continuity of communication. (WHO 2009) Once an incident has been identified, consideration should be given very quickly to proactively communicating with the public and other key stakeholders.

When to communicate

The use of a risk assessment process will guide when, what and how to communicate.

Planning and preparedness

Communication for the planning and preparedness phase should be undertaken as soon as possible and at regular intervals to review existing arrangements. It is a good practice to develop risk registers so that foreseeable risks taking into account a hazards severity and likelihood can be identified. Once all hazards have been identified and their risk assessed, they can be prioritised and mitigated against.



Myth: If we give them an inch, they'll take a mile.

Action: If you listen to people when they are asking for inches, they are less likely to demand miles. Avoid the battleground. Involve people early and often.

Incident response

Irwin et al (1999) in their book Chemical Incident Management suggest three warning periods where communication is merited, starting from when the population is first put at risk (not from when event was discovered); 0-2 hours, 2-12 hours and 12-24 hours. These need to be followed by communication during any recovery phase.

First period (0-2 hours)

Initially, word of mouth, pre-existing email contacts or social media are the only means available of involving as many agencies as possible.

Second Period (2-12 hours)

The media will be involved in issuing up to date information. Agencies will be receiving calls from the public and it is essential that all agencies have the same briefing sheet to ensure consistent information is given out. There will be time during this period to develop and distribute written communication with as many agencies as possible agreeing the content of the literature.

It is in this period that there is a window of opportunity, in the immediate aftermath of an incident, to initiate the registration of exposed individuals for future follow up in epidemiological studies.

Third period (12-24 hours)

During this period each household and commercial establishment should receive a written communication giving details of the event, the action to be taken by the population and the action being taken by the statutory authorities to ensure a return to normality. This may need to be undertaken by special agreement with the mail delivery company (such as Royal mail), who will need to identify each address and deliver letters.

Recovery Phase

Effects of maritime incidents may take months or even years for recovery with extended impact upon health, livelihoods (tourism, fisheries, recreation) and ecosystems. Incidents like the *Exxon Valdez* and *Deepwater Horizon*, (see *Arcopol+ case studies*) illustrate this very clearly. In such cases, provision of communications, information and support will be valuable to those affected and as such may be necessary over prolonged periods.

At the end of the incident a further written communication should be delivered to the affected population.

Follow up of exposed or affected individuals is likely to be a long-term activity underpinned by the processes put in place in the immediate aftermath of the incident such as establishing an affected persons registry and designing a program for long term health monitoring. Systems for the storage, retrieval and analysis of the data will be needed as will consideration of relevant data protection legislation.

What to communicate

Planning and preparedness

The likelihood of achieving a successful risk communication program increases with your knowledge of those with whom you are communicating. Early in the process, know who your interested parties are, what their concerns are, how they perceive risk, and who they trust. It is vital that all parties are dealt with equally and fairly.

What to communicate at the planning stage will be a process of identifying stakeholders and letting them guide the process by identify-ing their concerns –

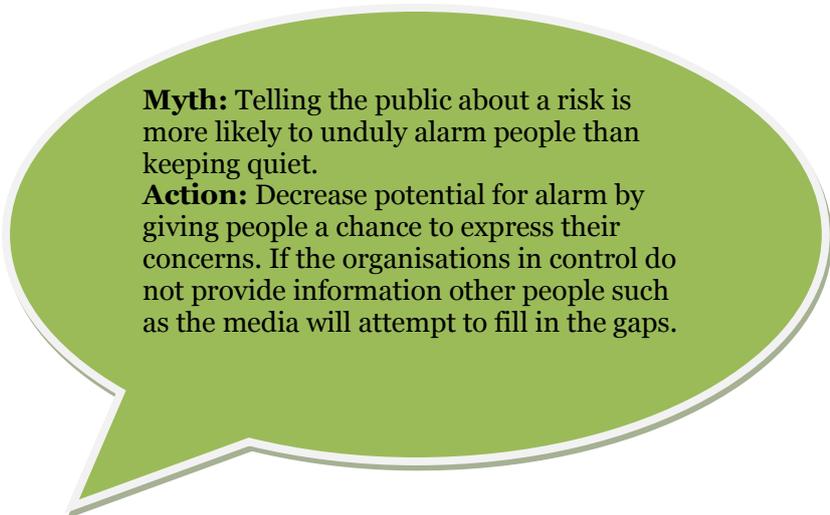
communication will be centered around these concerns. This is also the opportunity to communicate any plans for incident response i.e. what to do if an alarm sounds scenarios.

Health or environmental messages / actions will only be as good as the information they are based upon. As such it is essential to have well defined procedures to receive, process and interpret data used for assessing the incident. Such data may come from a variety of sources and a list of key contacts will be important. Data may include at-scene observations, environmental monitoring, weather and tide reports, dispersion modelling, medical reports and feedback from public and other agencies. Furthermore this is likely to change over time and as such handling processes must be dynamic. Once interpreted the data should be crafted into a message that a lay person can understand in order for it to be effective.

Incident response

The purpose of disseminating public information may be to advise the public to take action (such as shelter or evacuation) or to promote effective risk reducing behaviour. In line with World Health Organisation recommendations (WHO 2009), during an incident the responders, volunteers and the public will often need to be informed about:

- The incident details/characteristics



Myth: Telling the public about a risk is more likely to unduly alarm people than keeping quiet.

Action: Decrease potential for alarm by giving people a chance to express their concerns. If the organisations in control do not provide information other people such as the media will attempt to fill in the gaps.

- Who is in charge
- The measures being taken to contain the release and/or stop exposure
- Who is (and who is not) currently under threat
- What the health effects from the exposure might be
- What the public can do to protect themselves
- How to get further information or treatment should symptoms or concerns arise and when, where and how these services will be made available
- The time at which an information update will be provided
- Case definition
- Outcome of risk assessment
- Monitoring arrangements
- Chemical characteristics

Public warnings and directives must be accurate, clear and repeated over more than one communication channel. They should be integrated and consistent incorporating the views of all major organisations involved.

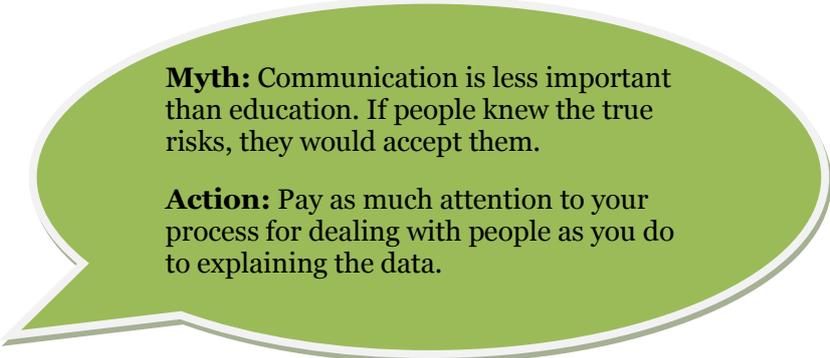
In some circumstances, volunteers may turn up to assist with planning and preparedness but more often with incident response. It is important that relevant information is given to volunteers to protect their health and safety. This situation is detailed in The ARCOPOL document Management of Volunteers, Coastal Pollution Response.

How to communicate

Planning and preparedness

Forging relationships in the planning phase can enable agreement for communications in an incident.

To achieve effective community participation communication methods to be considered are; Letters - either named or via letter drop, email, leaflets and posters, the web, social media, advertising, help lines, liaison groups, surgeries/open days, community meetings – attending theirs, public meetings, or seeking out opinion leaders in the community. It is likely that more than one method will need to be employed in order to reach target audiences and that the methods used should be kept under review to ensure their effectiveness.



Myth: Communication is less important than education. If people knew the true risks, they would accept them.

Action: Pay as much attention to your process for dealing with people as you do to explaining the data.

Incident response

Communication skills are very important and are best left to communication professionals who will coordinate the necessary communication action. This may include calling on nominated people from each relevant agency with training in public or media communication.

Using a single spokesperson can be an effective way to ensure consistency and as such they should be identified at an early stage. This is particularly important when a multi-agency response is required to an incident, established through formal Command and Control mechanisms. However, the media may want to refresh their news stories and may ask for alternative spokespeople to be provided hence a spokesperson for each organisation should be identified to field organisation specific questions. Trusted members of the public can also be used to relay key messages. A lead organisation for communications should be identified at an early stage which will be dependent on the circumstances of the incident.

The World Health Organisation, (WHO 2009) have developed several principles for use when preparing risk communication messages;

SIMPLE – People want to hear words they can understand

TIMELY – People want information as soon as possible

ACCURATE – People want information that is to the point

RELEVANT – Responses to the public's questions should be factual

CREDIBLE – Openness is the key to credibility

CONSISTENT – All organisations have the same key messages.

The first step in deciding how to communicate is to identify all those within the organisation who will be involved in order to:

- Involve press office
- Agree a line to take to avoid sending contradictory messages
- Identify who will lead communication process
- Consider legal advice
- Consider the timescale
- Agree communication mechanisms

For effective communication, objectives need to be clarified - who are you trying to communicate with and do you want to inform, warn or reassure them. Try and anticipate potential pitfalls by checking sources of information and whether they are consistent with other knowledge. Pilot messages before release.

Consider the target audiences risk perception and monitor and review each communication routinely; records of decisions taken, resulting outcomes and any learning points should be made and retained. It is important to monitor radio and television reports and social media to see how the information is being used and to enable early correction of any misleading lines of press interpretation or scare stories.

Methods of communication to be considered include daily meetings with press and/or stakeholders, newsletters, social media, local press, radio broadcasts, via General Practitioners and health service websites, through town halls/local authority officials, and via a helpline.

Since establishing a public helpline may be necessary to support incident response, arrangements for when and how to do this should be agreed prior to an incident in the planning phase. In the response phase, consideration needs to be given to the information which will be available to the public over the helpline and mechanisms to enable commonly asked questions to be identified with standard answers provided. Systems for escalating difficult or unusual questions to more senior staff should be in place.

In certain cases it may be necessary to issue legal enforcement warnings where public order issues may arise, such as those seen during looting of containers e.g. *MSc Napoli* incident, where members of the public removed the contents of beached containers and as a consequence put themselves at risk from hazardous chemicals and physical risks.

In relation to the media, if the flow of information to them is poor and the press report that they cannot establish the details of an incident, the public may think that not enough is being done, that services are not coping or that there is a cover up. Proactive handling of the media with consistent messages is essential for effective incident response.

As with the planning phase applying different methods of communication will be necessary and is recommended. It is important that the communications are planned, coordinated and consistent with each other.

Evaluation

Success means reaching a shared understanding of risk with the relevant target audience. This can be assessed in terms of how close you have come to fully meeting your objectives about the purpose of the communication. (Pencheon et al 2003)

Routine and honest review of experiences identifies learning points and improves future risk communication promoting excellence over time as well as efficient and cost effective procedures.

Risk communication can be evaluated using Donabedian's framework (Lewis et al 2008), based on the three parameters of structure, process and outcome. Examples of what could be evaluated under each parameter are outlined below but due to the uniqueness of circumstances and communications, it is not possible to be prescriptive in these lists.

Structure

Were communications procedures set out in basic protocols?

Did they include communications with local agencies, the media and the public?

Were there facilities for a helpline, if required.

Process

Was the procedure followed?

Were there communications with other agencies?

Did the helpline get set up?

Outcome

Were there difficulties in managing the incident due to problems with communication?

Was the message effective in reaching the intended audience?

Were the messages clear and could they be easily understood?

How many hits on the website or contacts with the helpline were there?

How are relevant organisations being talked about on social media?

How many complaints have been received?

Organisations may already have their own evaluation procedures or processes such as root cause analysis and wash ups in existence which can be used.

In addition to post-incident review, it is necessary to ensure there is a procedure for ongoing pro-active training and review in order to ensure that hazard and risk registers are contemporary and that persons with responsibilities in risk communications are conversant with current procedures and policies

Appendix 1

Templates for categories of chemicals

Template 1 – Gases/Evaporators

Examples; Gases include chlorine, oxygen, ethylene oxide. Evaporators include benzene, petroleum, styrene

Behaviours/Characteristics;

Will primarily enter the atmosphere and migrate with prevailing winds

Major Risks;

Toxic. Explosive. Flammable. Corrosive

Major route of exposure;

Inhalation. Direct contact

Who is at risk;

Populations and ecosystems downwind of incident

Action to minimise exposure;

Stay upwind, stay indoors, evacuation

Frequently asked questions;

What are gases and evaporators?

Chemicals that either exists as a gas or as a volatile liquid (vaporises) under normal conditions. Gases and vapours can be lighter or heavier than air and as such some will rise into the atmosphere, whilst others may remain close to the ground.

How are they transported?

They are generally transported in sealed cylinders or drums, often under pressure. They may also be transported as bulk products in tankers.

If there is an incident, will there be effects?

Incidents are unlikely as materials are contained. However if there is an escape such chemicals pose a potential risk of travelling over wide distances beyond the source of the incident, as clouds or plumes posing a risk of exposure to people and environments.

What are the health risks?

The main route of exposure for gases and evaporators is via inhalation. Acute (short term) health risks are likely to be respiratory, eye and skin irritation. The type of effects from exposure will depend upon the specific chemicals in question, however these are likely to be transient. Heavy gases or vapours may collect in low lying places e.g. drains, under bridges etc with a risk of asphyxiation. Gases and vapours may be flammable.

What should I do if there is an incident?

Where possible, stay upwind of the incident. Stay indoors, keep doors and windows shut, and wait for information via the media. Avoid confined spaces and low lying areas. Avoid using naked flames and sources of ignition. If you have an existing respiratory condition this may be exacerbated. Avoid exposure. Keep your medication to hand.

What should I do if I am exposed to a gas or evaporator?

You should remove yourself from the source of exposure. Remove any clothing that may be affected, double bag and leave outside your home. Await further information. If you feel unwell seek medical advice.

What about my children?

Children may be more susceptible to the effects of exposure. Follow the advice above.

What if I am Pregnant?

Certain gases and evaporators may be harmful to the unborn child. Follow the advice above.

What about foods / crops?

By their tendency to disperse quickly in the atmosphere, gases and evaporators are unlikely to affect foods and crops. Washing and peeling should remove any potential risks, although this will be dependent upon the chemicals involved. Deposits from smoke and rainfall may leave potentially harmful residues requiring foods to be disposed of.

What about my pets?

Keep pets indoors, where possible, or away from low lying areas.

Will there be any long term effects?

Risks of long term effects are low but where this is possible local health teams will provide follow up services to those communities that may have been affected.

Template 2 – Floaters

Examples; diesel and gas oil, vegetable oils, phthalates

Behaviours/Characteristics;

Form surface slicks with potential for direct exposure at sea and shoreline. Will migrate with tides and currents

Major Risks;

Toxic. Explosive. Flammable. Pollutant

Major route of exposure;

Ingestion. Contact

Who is at risk;

Swimmers and recreational users of the water and shoreline, marine and shoreline ecosystems

Action to minimise exposure;

Avoid contact with water, affected wildlife and environments

Frequently asked questions;

What are floaters?

Chemicals, that are lighter than water and of low solubility, which results in them floating on the surface.

How are they transported?

They are generally transported in sealed containers or drums, or transported as bulk products in tankers.

If there is an incident will there be effects?

Incidents are unlikely as materials are contained. However if there is an escape such chemicals pose a potential risk of travelling on the surface of water and reaching the shoreline.

What are the health risks?

The main route of exposure for floaters will be via direct contact with water and affected coastal features (rocks, sand, seaweed, wildlife), and possibly via ingestion. Inhalation of vapours or aerosols generated from waves may be possible. Acute (short term) health risks are likely to be eye and skin irritation and ingestion. The type of effects from exposure will depend upon the specific chemicals in question, however these are likely to be transient. Local marine foods such as shoreline crustaceans and tidal beds may become affected and provide a source of exposure.

What should I do if there is an incident?

Avoid contact with water in affected the area. Avoid contact with contaminated wildlife and shorelines. Avoid ingestion of sea food from impacted areas. Wait for information via the media.

What should I do if I am exposed to a floater?

You should remove yourself from the source of exposure. Remove any clothing that may be affected, double bag. Await further information. If you feel unwell seek medical advice.

What about my children?

Children may be more susceptible to the effects of exposure. Follow the advice above.

What if I am pregnant?

Certain floaters may be harmful to the unborn child. Follow the advice above.

What about foods / crops?

Floaters are unlikely to affect foods and crops in-land, but may affect shoreline and marine plants and animals. Avoid contact and ingestion of marine foods until given the all clear.

What about my pets?

Keep pets away from affected areas.

Will there be any long term effects?

Risks of long term effects are low but where this is possible local health teams will provide follow up services to those communities that may have been affected.

Template 3 – Dissolvers

Examples; acetic acid, alcohols, sodium hydroxide, glycols.

Behaviours/Characteristics;

Form solutions within the water with risks at sea and shoreline. Will migrate with tides and currents

Major Risks;

Toxic. Pollutant

Major route of exposure;

Ingestion. Contact

Who is at risk;

Swimmers and recreational users of the water and shoreline. Marine and shoreline ecosystems

Action to minimise exposure;

Avoid contact with water and affected wildlife and environments

Frequently asked questions;

What are dissolvers?

Chemicals that dissolve in water, which results in them mixing with the main water body.

How are they transported?

They are generally transported in sealed containers or drums, or transported as bulk products in tankers.

If there is an incident will there be effects?

Incidents are unlikely as materials are contained. However if there is an escape such chemicals pose a potential risk of travelling within the water body and reaching the shoreline. Some dissolvers may accumulate in marine organisms such as shell fish.

What are the health risks?

The main route of exposure to dissolvers will be via direct contact with water and affected coastal wildlife, and possibly via ingestion. Inhalation of aerosols generated from waves may be possible. Acute (short term) health risks are likely to be eye and skin irritation and ingestion risks. The type of effects from exposure will depend upon the specific chemicals in

question, however these are likely to be transient. Seafoods such as fish may become affected and provide a source of exposure.

What should I do if there is an incident?

Avoid contact with water in affected area. Avoid contact with contaminated wildlife and shorelines. Avoid ingestion of sea food from impacted areas. Wait for information via the media.

What should I do if I am exposed to a dissolver?

You should remove yourself from the source of exposure. Remove any clothing that may be affected, double bag. Await further information. If you feel unwell seek medical advice.

What about my children?

Children may be more susceptible to the effects of exposure. Follow the advice above.

What if I am pregnant?

Certain dissolvers may be harmful to the unborn child. Follow the advice above.

What about foods / crops?

Dissolvers are unlikely to affect foods and crops in-land, but may affect shoreline and marine plants and animals. Avoid contact and ingestion of marine foods until given the all clear.

What about my pets?

Keep pets away from affected areas.

Will there be any long term effects?

Risks of long term effects are low but where this is possible local health teams will provide follow up services to those communities that may have been affected.

Template 4 – Sinkers

Examples; creosote, coal tar, heavy oils

Behaviours/Characteristics

Travel to the sea bed where they may slowly dissolve or adhere to solids or marine life. Will travel less with currents and tides. Potential to bioaccumulate.

Major Risks;

Toxic. Pollutant

Major route of exposure;

Via food chain

Who is at risk;

Final consumers. Marine ecosystems

Action to minimise exposure;

Avoid consumption of seafood

Frequently asked questions;

What are sinkers?

Chemicals that are heavier than water, which results in them sinking within the main water body.

How are they transported?

They are generally transported in sealed containers or drums, or transported as bulk products in tankers.

If there is an incident will there be effects?

Incidents are unlikely as materials are contained. However if there is an escape such chemicals pose a potential risk of sinking within the water body and reaching the sea bed and the shoreline. Sinkers may accumulate in marine organisms.

What are the health risks?

The main route of exposure to sinkers will be via direct contact with affected marine life and sea bed materials, and possibly via ingestion. Acute (short term) health risks are likely to be ingestion risks and eye and skin irritation. The type of effects from exposure will depend upon the specific chemicals in question, however these are likely to be transient. Seafoods such as shell fish may become affected and provide a source of exposure.

What should I do if there is an incident?

Avoid contact with water in affected area. Avoid contact with contaminated wildlife and shorelines. Avoid ingestion of sea food from impacted areas. Wait for information via the media.

What should I do if I am exposed to a sinker?

You should remove yourself from the source of exposure. Remove any clothing that may be affected, double bag. Await further information. If you feel unwell seek medical advice.

What about my children?

Children may be more susceptible to the effects of exposure. Follow the advice above.

What if I am pregnant?

Certain sinkers may be harmful to the unborn child. Follow advice above.

What about foods / crops?

Sinkers are unlikely to affect foods and crops in-land, but may affect shoreline and marine plants and animals, particularly those that occupy the sea bed (benthic communities). Avoid contact and ingestion of marine foods until given the all clear.

What about my pets?

Keep pets away from affected areas.

Will there be any long term effects?

Risks of long term effects are low but where this is possible local health teams will provide follow up services to those communities that may have been affected.

Template 5 – Unknown / Packaged products

Examples;

Packaged goods such as drums, cylinders, IBCs, packets etc

Major route of exposure;

Direct contact with washed up containers (only those damaged revealing contents)

Who is at risk;

Swimmers and beach users. Marine and shoreline ecosystems

Action to minimise exposure;

Avoid contact with containers and areas where they have beached

Frequently asked questions;

What should I do if I see a container?

Avoid contact and stay clear of affected area. Avoid contact with contaminated wildlife and shorelines. Contact local coastguard or emergency service and await their arrival.

What should I do if I am exposed to a container?

Risks from containers will only arise if containers are breached or damaged. Keep away from the area until emergency responders arrive. If you feel unwell seek medical advice.

Appendix 2

Initial Response Check List

1). What do I currently know about the situation?

2).What other sources of information can I access?

Local news -

Other Health Department Officials -

Medical Professional -

Others on the Scene -

Local Fire/Police/EMS -

Maritime Coastguard Agency -

Environment Agency -

Others _____

3). What is the scope of damage as it is currently understood?

4). What is the potential for additional harm?

5). Whom do I need to contact?	Yes	Done	Note
Local Health Board(s)	<input type="checkbox"/>	<input type="checkbox"/>	_____
Local Authority	<input type="checkbox"/>	<input type="checkbox"/>	_____
Local Hospitals	<input type="checkbox"/>	<input type="checkbox"/>	_____
Fire Service	<input type="checkbox"/>	<input type="checkbox"/>	_____
Police	<input type="checkbox"/>	<input type="checkbox"/>	_____
Ambulance	<input type="checkbox"/>	<input type="checkbox"/>	_____
Media (Local/National)	<input type="checkbox"/>	<input type="checkbox"/>	_____
Schools	<input type="checkbox"/>	<input type="checkbox"/>	_____
Business	<input type="checkbox"/>	<input type="checkbox"/>	_____
Transportation facilities	<input type="checkbox"/>	<input type="checkbox"/>	_____
Local Fisheries	<input type="checkbox"/>	<input type="checkbox"/>	_____
Others _____			_____
_____			_____

6). What can be done immediately to contain or limit the harm?

Evacuation _____

Shelter in Place _____

Warnings/Public announcements _____

Closing off or limiting access _____

7). What actions could members of the public take to reduce their risk?
 (Boil water, avoid exposure, stay inside, wash hands, watch for symptoms, monitor media, etc.) _____

8). Is a press conference or statement needed? Yes No

If yes → When will it be held? _____

Where will it be held _____

Has the spokesperson been notified? _____

Has the press been notified (Radio-TV-Print)? _____

9). Are other channels of communication appropriate?

	Yes	Done	Note
Press Release	<input type="checkbox"/>	<input type="checkbox"/>	_____
Flyers	<input type="checkbox"/>	<input type="checkbox"/>	_____
Facts Sheets	<input type="checkbox"/>	<input type="checkbox"/>	_____
Hot Line	<input type="checkbox"/>	<input type="checkbox"/>	_____
Web	<input type="checkbox"/>	<input type="checkbox"/>	_____
Blast Fax	<input type="checkbox"/>	<input type="checkbox"/>	_____
Other	<input type="checkbox"/>	<input type="checkbox"/>	_____

Will a Joint Information Center be needed? _____

Who needs to be part of the JIC? _____

10). What resources will be needed in the short term to manage the event? (Telephone lines, FAX machines, photo-copiers, computers, personnel, flyers, etc.)

Appendix 3

Standard text for a press statement

The purpose of this initial press statement is to answer the basic questions: who, what, where, when. This statement should also provide whatever guidance is possible at this point and detail how further information will be disseminated. If possible, the press statement should give phone numbers or contacts for more information and assistance. This template is meant only to provide guidance as one template will not work for every situation.

FOR IMMEDIATE RELEASE

CONTACT FOR MEDIA LEAD:

PHONE:

DATE OF RELEASE:

Headline: Insert your primary message to the public

- Dateline (your location)-Two or three sentences describing the current situation.
- Insert actions being taken.
- List actions that will be taken.
- List information of possible reactions of public and ways in which the public can help.
- Insert quote from official spokesperson providing reassurance.
- List contact information, ways to get more information, and other resources.
- List which agencies are involved and which agency is taking the communications lead.

Appendix 4

Template for registering affected individuals *Requirements for data protection*

Details of affected person:

Name:

Address:

.....

Postcode:

Tel:.....

Date of birth: Sex:

Occupation:

Employer details:

GP name:

GP address:

GP Tel:

Details of potential exposure:

Exposure location:

Length of time at exposure location:

Clinical complaints:

Any relevant diagnosis:

Date of death (if applicable):

Contact person for exposed person:

Name:

Relationship to exposed person:

Contact details:

Appendix 5

Contacts Template

Role:	Name:	Contact Details:
Governing/ Government Body		
Strategic Command Manager		
Tactical Command Manager		
Operational Command Manager		
Scientific and/or Technical Lead		
Principal Media Liaison		
Internal Incident Manager		
Administrative Support Officer		
Salvage Control Unit		
Port / Harbour Authority		
Voluntary Group Lead		
Community Group Lead		
Environmental Lead		
Public Health Lead		
Local Government Lead		
Emergency Planning		

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