RESPONSIBLE PRODUCTION
GUIDANCE AND TOOLKIT

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Introduction to the Responsible Production Guidance and Toolkit

GENERAL INTRODUCTION

There is a critical need today for the adaptation of existing management tools into a simple, **integrated guidance on safer production and safer chemicals handling**, specially addressed to suppliers and users in **Small and Medium Sized Enterprises (SMEs)**.

Any industry or activity that involves chemicals poses a risk to workers, to the public and to the environment in the event of an accident. One therefore must have in place the means to understand, prevent, prepare and respond to such accidents, and to guarantee the safety of both workers and the wider community. **To achieve this, the whole value chain must be addressed and engaged, and risk information must be made available to business partners, end customers and affected communities.** Efforts to foster the safe use of chemicals cannot stop at the company door, but must be part of **a wider approach to chemical product stewardship[1] along the value chain[2] and in the community.** This leads companies into the field of **Corporate Social Responsibility (CSR), where community outreach and the establishing of partnerships is paramount.**

In many developing countries, SMEs form the backbone of the industrial sectors where hazardous chemicals are manufactured, transported, repackaged and used. Unsafe manufacturing and handling operations in SMEs have serious environmental and health consequences. To set up effective internal safety management approaches and to start a dialogue and ongoing communication with workers and nearby communities, SMEs need to be involved in initiatives involving other stakeholders, including larger companies, aimed at **fostering chemical safety management and chemical risk information up and down the value chain.**

WHY USE THIS GUIDANCE?

Use the Guidance to support:

- identifying and understanding the hazards and risks related to the company products and operations
- identifying opportunities for reducing risk and costs
- engaging with business partners and communities to improve safety and preparedness for accidents with chemical products
- promoting risk communication and product risk information along the value chain;
- training workers and business partners in chemical safety
- improving procurement systems to include chemical safety management
- measuring and communicating performance

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1   Chemical product stewardship is the practice of making health, safety and environmental protection an integral part of the life cycle of chemical products (ICCA Product Stewardship Guidelines, 2007)

2   The chemical industry value-chain is composed of importer/suppliers, contractors, producers, transporters, end customers, and other relevant business partners. It also includes other stakeholders such as local communities and authorities who are affected by or affect the value-chain.

Introduction to the Responsible Production Guidance and Toolkit

The **Responsible Production Guidance and Toolkit** is intended for managers and safety officers. It aims to help them address the hazards and risks related to the manufacturing, processing and handling of chemical substances in their operations.

This Guidance builds on the work of international development agencies and institutions, industry associations, and inter-agency initiatives, in the promotion of chemical safety management and emergency preparedness in Small and Medium Sized Enterprises in the chemical and mining sectors. It also integrates approaches from leading CSR initiatives, tailored to the needs of SMEs. It intends to help safety officers and managers not only address chemical hazards at site, but also to promote chemical safety within business partners and clients, through fostering risk communication and chemical safety information along the value-chain.

Though the role of managers and safety officers is emphasized throughout this document, many of the best practice approaches and assessment tools can be used by local authorities and government officials in their planning and inspection activities. The role played by managers (particularly senior managers) in influencing safety is critical to achieving the required result. Safety officers are employees with a specific role (advising on safety), however they are not responsible for safety. Safety is achieved by the combined efforts of all employees at all levels.

Other stakeholders share similar aims in fostering chemical safety in the industry: other businesses, local authorities and government officials with responsibilities in protecting the public and the environment from impacts related to mishandling of hazardous chemicals. These stakeholders might include, for example, safety inspectors, civil protection officers and fire inspectors. Ultimately safety is the responsibility of the site operator.

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3   This document has a generic approach. It provides the basis for further country and sector specific adaptation, taking into account the needs of the SMEs which will be applying the proposed approach. While some companies will find it easy to apply directly the Tools herein for managing their chemical hazards, others will require expert support for the adaptation of the Tools to their specific situation and sector, as well as to company culture.

Other Businesses

Some of the companies you are doing business with will have systems in place to support risk identification, management planning, and emergency response. They will want to ensure that the principles to which they are committed and the policies they use direct their day to day working procedures. Naturally, such companies wish to strictly observe procedures and will not tolerate compromise with other organisations up and down their value chain.

Companies may find it difficult to call for the smaller organisations with which they do business to comply with the sophisticated systems and procedures that they require of themselves. At the same time they want to know if these small organisations are operating in a way that presents undue risk. This Guidance provides a basis for businesses to develop confidence in the operations of the smaller organisations with which they have relationships.

This guidance can provide the criteria against which small organisations can self declare their performance to larger organisations during tender and review processes. It can also provide the criteria that larger businesses can use for second party checks of the performance of smaller organisations.

Local Authorities and Government Officers

The concerns and requirements of local authorities and Government Officers should be considered throughout. Local authorities and Government Officers should be a source of information, expertise, and constructive input. Plans and outputs can be reviewed by local authorities and Government Officers to better understand and develop appropriate responses to significant issues.

Local authorities and Government Officers can also play a role in collaborating with other businesses, whether in the area, or at a regional and national level.

HOW TO USE THE GUIDANCE AND ITS TOOLS?

The Guidance and Toolkit includes five sections:

1. Identify Responsible Production Issues
2. Get the right people involved
3. Develop your plan
4. Put the plan into practice, Train and Communicate
5. Evaluate how well you did

Together, these sections provide a systems approach to managing the risks and impacts associated with chemical hazards. The system is not meant to be a stand alone system. It is meant to be integrated with your existing management practices and systems.

Each section in the Guidance includes a number of tools that, when used together, will allow you to effectively manage risks and impacts associated with chemical hazards.

We might more simply describe these sections of the Guidance as follows.

The first section regards **understanding** what it is you have to manage. This means that you have to identify the issues that are most important or material to your performance and success, and understand them as fully or completely as possible.

The second section is also about making sure that your **understanding** is as **complete** as possible. The key message here is that you will not be able to develop this understanding unless you engage with the right people: all stakeholders concerned and/or potentially exposed to the chemical hazards related to your products and activities. You have to be inclusive. You have to understand the issues and concerns of the people who will be affected by your products, actions and decisions or whose own actions and decisions can affect your organisation and its performance.

The next two sections regard how you **respond** to this understanding. Your success as an organisation will depend on giving the right response to your stakeholders concerns on your chemical risk and hazards. These will include the concerns of your workers, business partners, customers, the end users of your products, the authorities and communities. So based on the understanding you have gained by applying the tools in the first two sections you will now be in a position to develop the best possible response – taking into account where you are as an organisation and what it will take to improve your performance on chemical safety issues. Section three is about **planning** for success. Section four is about **doing it**.

The last section, section five, regards **improvement** and **transparency**. The world does not stand still. Every successful organisation is constantly looking for ways to do better. The best way to do this is to **check** and see how well you have done, to compare your performance with benchmarks for best practice, and then to make changes that will improve your performance.

Best practice in this area also includes being **transparent** about what you have achieved and what you are planning for the future. In fact, this transparency links back to section two. Involving others is not a one way street. If you have involved stakeholders in helping to identify issues and plan responses, they will be expecting you to let them know how you fared. If you don't let them know how you did they will be less inclined to engage with you in the future. And if they do not engage, you will be less likely to have the information and understanding you need to succeed as an organisation.

The following model shows how each section builds upon the previous in a systematic way.

Identify responsible production issues	Get the right people involved	Develop your plan	Put the plan into practice, train and communicate	Evaluate how well you did

This model will become clearer as you explore the content of each section. Each section addresses the following questions:

A. **What** is it that we have to do?
B. **Why** do we have to do it?
C. **When** should we do it?
D. **How** should we do it?

The tools themselves are the heart of this document. They are first introduced in the section on how to do it (Section D). They have been designed to be as simple to use as possible. They have drawn on best practice so that they have the best chance possible to be recognised and accepted by the people with which you do business.

Tools are organized in a sequence. They are divided into basic tools and advanced tools. The basic tools should all be used to ensure **responsible production**. The advanced tools provide additional guidance for companies who are looking to advance and improve.

You will find in the next page a map of the tools provided in this guidance, showing how they are interlinked and build upon each other.

Last but not least, each section includes references to additional information and further reading. Many of the references have been used as source material. Others provide an insight into more advanced and sophisticated approaches.

A training package has been developed based on this guidance. The best way to get started is to go through the training and appoint somebody with the responsibility of using the **Guidance and Toolkit**.

We wish you every success with responsible production.

1. IDENTIFY RESPONSIBLE PRODUCTION ISSUES	BASIC TOOLS	ADVANCED TOOLS
UNDERSTAND THE PROCESS FLOW	Tool **1.1** Prepare process flow chart	Tool **1.6** Hazard classification (control banding)
RISK ASSESSMENT AND PRIORITISATION	Tool **1.2** Chemical inventory and hazard classification	
STANDARDS, CODES, LAWS AND REGULATIONS	Tool **1.3** Identify risks	
	Tool **1.4** Hazard hotspots map	
	Tool **1.5** Legal register	

2. GET THE RIGHT PEOPLE INVOLVED		
IDENTIFY YOUR STAKEHOLDERS	Tool **2.1** Map stakeholders	
UNDERSTAND YOUR STAKEHOLDERS AND HOW THEY ENGAGE	Tool **2.2** Profile stakeholders	
ENGAGE YOUR STAKEHOLDERS	Tool **2.3** Select the engagement method	
PRIORITISE STAKEHOLDER ISSUES	Tool **2.4** Plan the engagement	Tool **2.5** Prioritise issues
REVIEW THE ENGAGEMENT PROCESS		Tool **2.6** Review engagement process

3. DEVELOP YOUR PLAN		
IDENTIFY RISK REDUCTION OPPORTUNITIES AND ANALYSE	Tool **3.1** Identify actions for risk reduction	Tools **3.7 to 3.11** prevent and reduce risk (per activity)
BUILD AND COMMUNICATE THE BUSINESS CASE	Tool **3.2** Risk reduction cost analysis	
SET OBJECTIVES, TARGETS AND INDICATORS	Tool **3.3** Set goals, objectives, targets and indicators	Tool **3.12** Business case
PREPARE CONTROL ACTION PLANS	Tool **3.4** Chemical control action plan	
DEVELOP TRAINING NEEDS ASSESSMENT AND PLAN	Tool **3.5** Training plan	
DEVELOP EMERGENCIES PLAN	Tool **3.6** Emergencies plan	

4. PUT PLAN INTO PRACTICE, TRAIN AND COMMUNICATE		
DEVELOP, IMPLEMENT AND TEST BEST PRACTICE	Tool **4.1** Best practices procedures	
TRAIN YOUR WORKERS AND BUSINESS PARTNERS	Tool **4.2** Develop training materials	
FOSTER RISK COMMUNICATION	Tool **4.3** Risk communication	
IMPROVE YOUR PROCUREMENT PRACTICE	Tool **4.4** Product risk information	Tool **4.5** Procurement checklists

5. EVALUATE HOW WELL YOU DID		
EVALUATE PERFORMANCE AND MANAGEMENT PRACTICES	Tool **5.1** Performance assessment	
COMMUNICATE PERFORMANCE	Tool **5.2** Management assessment	
PROVIDE ASSURANCE	Tool **5.3** External communications	Tool **5.4** Independent assurance

Section 1   Identify Responsible Production Issues

This first section is concerned with understanding what it is you have to manage. This means that you have to identify those issues that are most important or material for managing your chemicals in a safe way, and that you have to understand them as fully or completely as possible.

A. WHAT?

Know your significant chemical and chemical process hazards, and their related risks for your business. This includes clearly understanding why some of the chemicals you are handling may be dangerous - explosive, flammable, toxic, corrosive - or harmful in some other way to humans, animals or the environment. The hazards intrinsic to the process (e.g. pressure, temperature, explosive dust atmospheres, electrostatic discharge) should also be known and understood. Do not forget that some chemicals may be in ostensibly 'closed' systems, e.g. ammonia refrigeration, hydraulic oils.

B. WHY?

1. You must know the hazards of your chemical processes, products and activities, and their related risks and impacts.
2. Chemical accidents can seriously damage your reputation or even put you out of business. You must understand the significance of the risks and impacts of your operations.
3. You must know what these process hazards and risks are costing you, and what additional unexpected costs these may bring as a result of an accident and related losses.
4. Non-compliance with environmental, health and safety regulations can cause injury, death or damage to the environment (air, ground or water pollution). You must know the legal requirements and standards related to the hazards and impacts of your operations.
5. Knowing that your operations may pose some risks is not enough. You need to know how to manage and reduce these risks and the opportunities provided by best practice in chemical risk management.

C. WHEN?

1. You may already be allowing unacceptable risks and losing money daily due to insufficient chemical risk management. So do it now!
2. This is essential information for running your business efficiently, productively and in a safe way, and for reducing costs.
3. Identifying and assessing hazards and risks should be done periodically and systematically, and in particular whenever there is an indication that a revision may be needed (such as in the case of new or changed processes, significant changes in the transport of hazardous substances, incidents, etc.). To be done effectively, this identification needs input from all stakeholders – that is your workers, business partners, customers, the end users of your products, the authorities and local communities - and so should be coordinated with stakeholder engagement activities (see Section 2 on this guidance)

4. If your business is up and running and you have not done this in a systematic way then do it now. Do it periodically and also before you make any change in your process or operations.

D. HOW?

To identify your chemical hazards and risks and to assess their associated Environmental, Health and Safety (EH&S) and Social impacts, you should follow a systematic step-by-step approach. You must first understand the process flows of your operations. Make sure to also take into account external activities that you can influence within your business, including the products and services you procure, and the products and services that you directly provide to your customers. Then identify what chemicals are involved and the related hazards. You will find that establishing an inventory and collecting hazard information will make it easier.

You must then make sure you identify all the potential health, environmental, social and economic risks associated with your chemical hazards. Potential chemical Hazard Hotspots can be fully identified and mapped by walking along each step of the process flow route.

Finally, by taking account of the legal requirements associated with your operations and business practices (Tool 1.5), you will have the opportunity to check potential non-compliance and plan the actions needed to address it. You will find below a diagram with the rationale behind this approach and the sequence of tools provided, and a table with the list of available tools in this section.

OPERATIONAL PROCESSES	CHEMICAL IDENTIFICATION AND HAZARD CLASSIFICATION	RISK ASSESSMENT AND PRIORITISATION	STANDARDS, CODES AND REGULATIONS
PROCESS FLOW ANALYSIS	CHEMICAL INVENTORY AND HAZARD CLASSIFICATION RISK IDENTIFICATION	HAZARD HOTSPOTS MAP	LEGAL REGISTER

ACTIVITIES	TOOLS
Operational processes: understand the process flow	Tool 1.1 Prepare a process flow chart
Chemical Identification and Hazard Identification	Tool 1.2 Chemical inventory and Hazard Classification
Risk Assessment and prioritisation	Tool 1.3 Identify health, social, environmental and economic risks Tool 1.4 Hazard Hotspots map Tool 1.6. Hazard Classification: control banding (ADVANCED TOOL)
Standards, Codes, Laws and Regulations	Tool 1.5 Legal Register

E. BASIC TOOLS

Tool 1.1 Prepare a process flow diagram

The objective is to clearly map the process flow in order to understand what the activities are and who is involved in them. This will help you understand where chemicals are used and located. Process flow means both the sequence of activities you undertake at your company, and the external activities that you can influence within your business, ranging from the products and services you procure, to the products and services that you provide.

This tool is available for download in Word format on the Responsible Production CD
STEP 1: PREPARE YOUR PROCESS FLOW DIAGRAM
Discuss and decide the boundaries of your process. Take into account what information you have available. Take into account to what extent you can trace your raw materials upstream, and your products and services downstream.
Where or when does the process start? In order to answer this question you will need to trace where your raw materials come from, what they are, and how they get to your business. A good way to start gathering this information is to discuss it with the person responsible for procurement and acquisitions within your company. You may also want to contact your suppliers and contractors and ask them for further information.
Where or when does it end? In order to answer this question you will need to trace where your chemical products and services are being delivered to and for what purposes. A good way to start gathering this information is to contact the person responsible for sales within your company. You may also want to contact customers directly and ask them for further information.
Discuss and decide upon the level of detail to be included in the diagram.
List all of the steps and activities in the process
Arrange the activities in sequence (make sure to include activities undertaken by your direct suppliers, in the transportation of your chemical products, by-products and waste materials and their use, and waste water treatment and disposal.)
Discuss the sequence of activities with the relevant people in your company and confirm that this is correct

Review the flowchart with your workers and your business partners, not forgetting to include:
      Workers and supervisors
      Suppliers
      Transporters
      Customers
      Other relevant stakeholders

Check to see if they agree that the process is drawn accurately.

STEP 2: IDENTIFY THE CHEMICALS, THEIR QUANTITIES AND THE HAZARDS INVOLVED IN THE PROCESS
Identify the chemicals involved in the first activity of the process.
Mark them on your flow-chart
Identify the quantities of the chemicals usually involved or present for this activity.
Mark them on your flow-chart
Identify the hazards associated with the activity, such as the potential for a fire, an explosion, or a loss of containment affecting workers and public health, or damaging the environment. Chemical hazards are intrinsic to the properties of the chemicals being handled: flammability, explosiveness, corrosiveness, acute toxicity, etc. You will find that most of this information is clearly explained in hazard/risk labels and Material Safety Data Sheets (MSDS) that should be made available from your suppliers.
Make sure to identify the hazards for all the chemicals involved at this activity. If you do not have information on all the chemicals, contact your suppliers, and ask them to provide you with Material Safety Data Sheets and other relevant hazard and risk information.
Mark the hazards on your flow-chart
Repeat this process through the entire process flow-chart. You will notice immediately that information concerning activities being undertaken outside your company will be relatively harder to get, when compared with activities being conducted within your company. Do not get discouraged, and ask for help from your business partners.

Tool 1.2 Chemical Inventory and Hazard Classification

The objective is to systematically identify all chemical substances that are stored, handled and used at your business, along with information on their quantities and type of storage, and to classify them according to information on chemical product information, labels, and MSDSs. Check this against the process flows to make sure you have not missed anything.

This tool is available for download in Word format on the Responsible Production CD

STEP 1: REVIEW EXISTING INFORMATION ON CHEMICALS STORED AND USED AT SITE

Establish what information already exists within the company regarding chemicals (e.g. purchasing records, stock control cards, inventories, suppliers' product information, Material Safety Data Sheets (MSDS), etc.).

Review the information.

STEP 2: PREPARE AN INVENTORY

List all chemical substances in an inventory. Begin with one department or process and proceed on a step-by-step basis until you have a complete inventory for your whole operation. Make sure to include:

Where they are found, stored and/or used

The chemical name, trade name / CAS number

The MSDS availability in the company, in the language of the workforce

R-Phrases / GHS classification (see Tool 2 below)

Amount in use

Notes about handling, use, storage, disposal conditions, etc.

Whether they are individual substances or mixtures (formulations)

Whether they are released as vapours during the handling of formulations or products

If they are generated during work activities (e.g. dust, fumes from welding)

Whether they are used as auxiliaries (e.g. fats, liquors, dyes, paints, adhesives)

Whether they are used for other purposes, such as cleaning workplaces and maintaining machinery (e.g. detergents, disinfectants, solvents, greases)

Whether they are found in final products

The form in which the chemicals are available (sack, drum, IBC, gas bottle, bulk, storage tank filled by road tanker, etc.)
Whether they react with water to release toxic or flammable gases

Now that you have updated your chemical inventory and finished your process flow diagram, you are better able to see where your Hazard Hotspots are within your process.

But what do you know about the actual risks involved? Who is being (or could potentially be) exposed to the hazards you have identified, both inside and outside your facilities? How vulnerable are they to the hazards posed by the chemicals you are handling? And what about the potential damage that your chemicals may cause to the environment, to sources of water, to soil, and to air quality?

Your process risks will be clearer to you if you start taking into account the fact that others may be exposed outside your company. For this, you may now want to have a better look at your chemical hazards and concerns and at their associated health, environmental, social and economic risks. Move onto Tool 1.3.

Tool 1.3 Identify health, environmental, social and economic risks

The objective of this tool is to better understand the health, environmental, social and economic risks posed by the chemicals you are handling, taking into account that your workers are not the only ones to be exposed in case of an accident. Other groups that may be exposed to hazards posed by your chemicals include the local community, your business partners and customers, and other external stakeholders. Mishandling of hazardous chemicals may also affect the environment, threatening the quality of sources of water, or poisoning land.

The risks posed by your chemical hazards will be directly related to the importance or 'severity' of potential health, social, environmental and economic impacts resulting from an accident, and the 'frequency' or probability of its occurrence.

This tool is based upon the use of a risk matrix to identify unacceptable risks. You will find additional guidance on the use of risk matrixes and other risk assessment methods in the Appendix.

This tool is available for download in Word format on the Responsible Production CD
STEP 1: CREATE A RISK ASSESSMENT TEAM
Identifying and understanding the relationship between your chemical hazards and the potential impact of an accident on the site, the community, business partners, clients, and the environment is not a one man task. At this stage you should identify staff members that may help you in a simple but thorough preliminary assessment of the risks related to your chemical hazards.
If you can also find a way to engage representatives from relevant stakeholders, this can be extremely helpful, particularly in subsequent iterations of this preliminary assessment. (You will find tools to help with this in Section 2)
STEP 2: REVIEW YOUR HAZARD HOTSPOTS
Go back to your process flow chart and the Hazard Hotspots you have identified and marked in your flow chart. Take into account available information and start with the hotspots you have identified, related directly to your business.
Pay particular attention to areas or process steps where you may be storing or handling large quantities of hazardous chemicals
Ask yourself: ☐ Are very toxic chemicals present? ☐ Are fertilizers, herbicides and pesticides being stored or handled in your business? ☐ Are you storing or handling butane, propane, ammonia, or chlorine? ☐ Could hazardous chemicals react with other chemicals nearby, or with water of with the atmosphere to create other hazardous chemicals?

Review your Hazard Hotspots taking into account the above hints

STEP 3: IDENTIFY RISK-PRONE AND VULNERABLE GROUPS, AREAS AND ASSETS IN CASE OF AN ACCIDENT

This step is concerned with identifying threatened objects (people, environment, and property) in case of an accident. Ask yourself the following questions and discuss them in the team:

☐ How many workers are undertaking activities where hazardous chemicals are involved?

☐ How many workers are undertaking activities near areas where hazardous chemicals are being handled or stored?

☐ Are activities taking place in an area of high population density?

☐ Are there any hospitals, schools, markets or shopping areas located nearby?

☐ Are hazardous chemicals being handled, stored, processed or used in or near:

…areas prone to flooding?

…agricultural areas?

…areas where water for drinking, agricultural or recreational use is resourced?

…nature protection areas?

STEP 4: IDENTIFY POTENTIAL ACCIDENT SCENARIOS RELATED TO THE HAZARD HOTSPOTS YOU HAVE IDENTIFIED

In this step you will find the identification and analysis of past accidents that have occurred in yours and your business partners' operations extremely helpful. Recalling well known accidents in the sector may also help you with identifying potential types of accidents (or 'accident scenarios') related to the hotspots you have already identified.

Taking into account the types and quantities of hazardous chemicals involved in each of the steps on your process flow-chart, try to list potential accidents related to the Hazard Hotspots you have already identified.

You may want to consider the following types of accidents (or 'accident scenarios'), and check if any of the hazards you have identified could have the potential to trigger or contribute to such event:

☐ Containment failures due to corrosion, metal fatigue, creep, deterioration or poor water management.

☐ Toxic release

☐ Emission of toxic or irritant gases or fumes

☐ Explosions: Unconfined Vapour Cloud Explosion (UVCE), Boiling Liquid Expanding Vapour Explosion (BLEVE), chemical explosion, dust explosion

☐ Explosion or fire from the handling of flammable gases in liquid form

☐ Chemical fire producing harmful gases

☐ Chemical fire leading to polluted water escaping as a result of attempts to extinguish the fire

☐ Leakage of hazardous chemicals from storage and process areas, or during transport

☐ Other (discuss among the risk assessment team)

STEP 5: IDENTIFY THE SEVERITY OF RELATED HEALTH, ENVIRONMENTAL, SOCIAL AND ECONOMIC IMPACTS IN AN ACCIDENT SITUATION

Taking into account the quantities and characteristics of the hazardous chemicals involved in your process flow, the threatened objects in case of a potential accident, and the potential accidents that may occur, identify what the related health, environmental, social and economic impacts – both inside and outside your facilities - could be, and assign a 'severity' (importance) factor, taking into account the scales below (Note: scales should first be discussed and agreed upon by the members in your risk assessment team).

At this step, it will be helpful if you consult with your business partners and other relevant stakeholders to understand their view on the social, environmental and economic impacts related to the potential accidents you have identified (you will find tools to help on this on Section 2)

Impacts on workers health	1. Negligible (temporary slight discomfort) 2. Limited (injuries resulting in temporary worker absence) 3. Serious (injuries resulting in temporary disablement) 4. Very serious (death or serious injuries resulting in permanent disablement of a worker) 5. Catastrophic (death or serious injuries resulting in permanent disablement of several workers)
Impacts on community health	1. Negligible (temporary slight discomfort) 2. Limited (injuries resulting in temporary discomfort) 3. Serious (injuries resulting in temporary disablement of a person in the community 4. Very serious (death or serious injuries resulting in permanent disablement of a person in the community) 5. Catastrophic (death or serious injuries resulting in permanent disablement of several persons in the community; community evacuation)
Impact on land use, agriculture and fisheries Impact on water resources Impact on quality of air	1. Negligible (no contamination, localised effects) 2. Limited (simple contamination, localised effects, natural remediation) 3. Serious (simple contamination, widespread effects with need for simple remediation) 4. Very serious (heavy contamination, localised effects with need for remediation) 5. Catastrophic (very heavy contamination, widespread effects with need for remediation)

Impact on company image	1. Negligible (small disturbance with no consequences)
	2. Limited (disturbance in the affected area of the company, without significant press coverage in the media)
	3. Serious (partial evacuation of the company and/or negative press coverage in the local media)
	4. Very serious (evacuation of the company and/or negative press coverage in the national media)
	5. Catastrophic (evacuation of the community and/or negative press coverage in the international media)
Impact on site facilities	1. Negligible (< 0.5)
	2. Limited (0.5 – 1)
	3. Serious (1 – 5)
Impact on transport infrastructures	4. Very serious (5 – 20)
	5. Catastrophic (>20)
Impact on community and social infrastructures	(x 1,000 or M USD, THB, PEN as appropriate and to be adapted to each company)

(Note: severity scales above are indicative only, and should always be adapted to both the country and the local context)

STEP 6: ESTIMATE THE LIKELIHOOD OF EACH OF THE IDENTIFIED ACCIDENT SITUATIONS ACTUALLY TAKING PLACE

Estimate the occurrence probability of each identified accident situation taking into account the following scale (Note: scales should first be discussed and agreed upon by the members in the team)	1. Practically impossible (not expected to happen during the lifespan of the operation)
	2. Unlikely (never happened, but could occur, perhaps during the lifespan of the operation)
	3. Rarely (expected to occur at least once every 10 years)
	4. Regularly (expected to occur at least once per year)
	5. Frequently (occurring more than once per year)

STEP 7: ASSIGN A RISK FACTOR TO EACH HAZARD HOTSPOT

☐ Assign each hazard hotspot a risk factor from 1/1 (lowest) to 5/5 (highest), taking into account the risk matrix

☐ Consider different possible hazard scenarios related to hot spots when assigning risk factors

☐ Repeat this for each activity in the process

☐ Mark the risk factor on your flow-chart

Frequency 5	5/1	5/2	5/3	5/4	5/5
Frequency 4	4/1	4/2	4/3	4/4	4/5
Frequency 3	3/1	3/2	3/3	3/4	3/5
Frequency 2	2/1	2/2	2/3	2/4	2/5
Frequency 1	1/1	1/2	1/3	1/4	1/5
	Severity 1	Severity 2	Severity 3	Severity 4	Severity 5

■ Area where risks are critical and require monitoring/control

■ Area where risks are considered unacceptable

STEP 8: PRIORITIZE YOUR HAZARDS HOTSPOTS

• List your Hazard Hotspots and prioritize them according to the risk factor you have assigned.

• Risks to which you have assigned a risk factor considered unacceptable, or deemed in critical requirement of monitoring and control should be acted upon as soon as possible. You will find guidance on preliminary identification of actions for risk reduction in Section 3. These risks should also be considered in defining your objectives and chemical control action plans (see also Section 3)

• Stakeholder concerns should be taken into account when evaluating hotspot priority (see tools in Section 2).

You have identified some of your Hazard Hotspots and prioritised them through assigning each a risk factor. It will be good to map them using the already available hazard information. For this you should take a systematic approach for mapping your Hazard Hotspots such as the approach proposed in the next tool – Tool 1.4. By applying this tool you will also be able to identify some of the hotspots you have missed, and collect further information on your chemical hazards and risks.

Tool 1.4 Map the hotspots

The objective is to map the Hazard Hotspots on a site map by walking along the process flow and identifying potential chemical Hazard Hotspots in each step of the process flow (tool 1.1), taking into account your inventory (tool 1.2) and the associated risks (tool 1.3).

This tool is available for download in Word format on the Responsible Production CD
STEP 1: MAP YOUR HAZARD HOTSPOTS
On-site:
Draw a simple ground plan of the company or use an existing company floor plan (drawing/graphics software can prove helpful, as can online mapping tools if they provide sufficient resolution)
Note the main areas and departments
Locate each internal activity in the process along with its associated chemicals and risk factor on the map
Make sure you have marked all the locations where chemical substances are used, stored and transported on the map
Indicate your Hazard Hotspots clearly
Off-site:
Get a plan of the region where your facility is located and clearly mark your site (if you have good internet access you may also want to use online mapping tools, if they provide sufficient resolution)
Identify the routes used by your suppliers for delivering chemicals used at your site
Identify the routes used to transport your chemical products, by-products, or waste materials to their final destinations (end-use/recycling/disposal)
Locate each external activity in the process along with its associated risk factor
On the plan, make sure you have marked all the steps involving the handling of your chemical products, by-products, or waste materials to their final destinations (end-use/recycling/disposal)
Indicate your Hazard Hotspots clearly

Now that you have a full chemical inventory, and a Hazard Hotspots map based on your process flows and risk identification, you need to establish the legal and other requirements that apply to what you do and to the chemicals in your inventory.

Tool 1.5 Legal Register

The objective is to list all legal, code, regulatory and other requirements that are applicable to your company's products (including hazardous substances used as raw materials, additives, cleaning materials, fuel, etc.), processes and operations.

This tool is available for download in Word format on the Responsible Production CD

STEP 1: IDENTIFY ALL LEGAL, CODE, REGULATORY AND OTHER REQUIREMENTS THAT MAY BE APPLICABLE TO YOUR PRODUCTS, PROCESSES AND OPERATIONS
Make a list of existing regulations that may be applicable to your raw materials, products, processes and operations by consulting with industry associations and technical institutions
When identifying possible applicable requirements, take into consideration both national and international laws, regulations, codes of practice, customer requests and standards, as well as industry (and company) voluntary commitments within the following areas:
- Environment (water, wastewater, air, waste, etc…)   - Chemical products (including product risk information)   - Flammable and explosive products   - Occupational health and safety   - Fire and rescue services   - Transport of dangerous goods   - Electrical equipment   - Control of major accident hazards   - Building codes   - Explosive atmospheres

STEP 2: IDENTIFY ALL REQUIREMENTS PRESENT IN YOUR LICENSES AND PERMITS
When identifying possible applicable requirements, take into consideration the ones associated with:
- Water usage   - Discharge of wastewater   - Solid waste management   - Transport of dangerous goods   - Occupational health and safety and fire inspection   - Other relevant requirements

STEP 3: LIST ALL APPLICABLE REQUIREMENTS
List all applicable requirements taking into account the sources you went through on the previous steps
Group them by product or process flow/steps and redo your list
For each applicable requirement, construct a simple table with the following columns:
• Product or Process Flow/Steps • Law /Code / Regulation • Requirement / Obligation • Periodicity

STEP 4: ESTABLISH, SCHEDULE AND ASSIGN RESPONSIBILITIES FOR UPDATING THE LEGAL REGISTER
Set a frequency for updating the register. In fact, you may have to define different revision/updating frequencies, as different requirements will be more subject to change than others in time
Your legal register will be shortly out-of date if you do not assign specific responsibilities for keeping it updated. Select someone from your staff who has the necessary skills and who will be in a better position for this task

By the end of this section you should have a better understanding of what it is you have to manage to assure the safe handling of your chemicals. In short, you should have an understanding of:

- The dangers – or hazards – posed by your products and operations

- Where these hazards are located

- What the factors influencing the likelihood and severity of an accident involving hazardous chemicals are, and what you can start doing to avoid any incidents.

- The legal requirements that may be applicable to your products, processes and operations

Ask yourself if you have this understanding. If not, you may want to revise your chemical inventory and hazard map, and go through Tools 1.1 to 1.5 again. You will probably notice that there seems to be something important missing, and that you really do not have a complete understanding about how your chemicals are handled, managed and used outside your operations i.e. what is happening along your value-chain – business partners, customers, the end users of your products – and what the concerns of other relevant stakeholders (such as the authorities and communities) may be regarding your operations and products.

The next section will help you to identify the right people to involve in order to complete your understanding of these issues.

F. OTHER SOURCES OF INFORMATION AND REFERENCES FOR FURTHER READING

Chemical Sector in Thailand
- UNEP Technical Report N.12. Hazard Identification and Evaluation in a Local Community (1992)
- GTZ Guideline for Industrial Provincial Officers (IPO) and Industrial Estate officers (IEO) on Advisory Services in Enhancing Safety Measures for SMEs (August, 2007)
- GTZ Chemical Management Guide for Small and Medium Sized Enterprises (October, 2006)
- GTZ Guideline on Safe Storage of Dangerous Goods and Dangerous Substances. Standards and Procedures for Bangpu Industrial Estate (November, 2002)
- GTZ Training Handbook on "How to get Appropriate Information". Standards and Procedures for Bangpu Industrial Estate (November, 2002)
- GTZ Training Handbook - Classification of Dangerous Goods and Dangerous Substances. Standards and Procedures for Bangpu Industrial Estate (November, 2002)
- GTZ Training Handbook on Accident Prevention by using the Guideline for the Safe Storage of Dangerous Goods and Dangerous Substances. Standards and Procedures for Bangpu Industrial Estate (November, 2002)
- ILO International Chemical Control Toolkit
- US OSHA Guide to The Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

Mining sector in Peru
- UNEP Technical Report N.12. Hazard Identification and Evaluation in a Local Community (1992)
- ICMI Gold Mining Operations Verification Protocol
- ICMI Cyanide Transportation Verification Protocol
- GTZ Guía para la gestión de sustancias químicas (April, 2004)

Section 2   Get the right people involved

The second section is about making sure that your understanding of what you must manage for assuring the safe handling of your chemicals is as complete as possible. The key message is that you will not be able to develop this understanding unless you get the right people involved (all stakeholders concerned and or potentially exposed to the chemical hazards related to your products and activities). You have to be inclusive. You have to understand the issues and concerns of the people who will be affected by your products, actions and decisions, or whose own actions and decisions can affect your and its performance.

A. WHAT?

Getting the right people involved is the foundation for all successful businesses. Engagement ensures that this happens.

B. WHY?

1. Your operations and the chemical products you are handling can affect the health, safety and livelihoods of others, and damage the environment.
2. What others do can affect your own performance and success.
3. You need to understand their issues, concerns and ideas in order to develop the best solutions for reducing chemical risks.
4. They need to understand your issues, situation and ideas in order to help you develop the best solutions. They must be fully aware of the chemical hazards and risks posed by your products and operations
5. You will not know what their issues, concerns and ideas are and they will not know what your issues, situation and ideas are if you do not talk to each other.
6. Everyone will benefit from a fuller understanding of the chemical hazards and risks posed by your products and operations.
7. You need to gain acceptance of the solutions. Most solutions for reducing the risks posed by your hazardous chemicals will not succeed if they are not understood and accepted by the people implementing and benefiting from them.

C. WHEN?

1. Do it now.
2. It doesn't matter what stage you are at (plan, do, check, act) you can begin to get people involved. Do not wait for the start of a new process. Adjust what and how you do things to where you are currently. Determine where involving others is most helpful with regard to improving your safety record and reducing chemical risks.
3. Do it continuously.
4. We are talking about developing mutually helpful relationships, not a single activity or event. Once you begin to involve people you must continue to involve them or you will lose them and they will turn against you.
5. Strike the right balance. Be aware of how much time you ask people to contribute. Asking for too much of their time (time taken away from their own jobs and roles) can have a negative impact.

Getting the right people involved has to be approached systematically. It is more than just talking to your neighbours or inviting the Non-Governmental Organization (NGO) or community association that has been complaining about your business in for a meeting. It involves a series of steps that will ensure you are not missing any important people or groups, and that when you do get these people involved it will be in a way that is constructive and productive.

The first step is to identify or map who your stakeholders really are. Who has an interest in what you do? Who can affect your business? Whose livelihood or health will your 's activities impact? You may find that the chemical products you are using or processing have moved through a long supply-chain before reaching your site. If you are producing chemicals, these may be handled by people other than your direct customers. You must identify who your stakeholders are along the value-chain, and in the wider community. These may include your workers, business partners, customers, the end users of your products, the authorities and communities. Once you have mapped your stakeholders you need to understand a little bit about them in order to make your relationship productive.

There are many different ways to engage with stakeholders. If you choose the right way you will develop a productive relationship to the benefit of all. If you choose the wrong way the relationship may become difficult to manage or may not be productive. Therefore you need to understand what methods are best, based on who your stakeholders are and your understanding of them.

Engagement of course must have a purpose. You are engaging to learn, to understand the best way forward and to improve your chance of success as a business. The chemicals that you are using, moving, or marketing will as a result be handled in a safe way. Stakeholders are part of your success. Accidents resulting from mishandling the chemicals that you are supplied or that you supply will affect your image and reputation among your stakeholders, and may result in fines, loss of customers, liabilities and other unforeseen costs. To avoid this you must make sure that your relationship with your stakeholders provides you with an understanding of their priority concerns, and that you have knowledge of how these concerns affect your service. The tools in this section will help you get the right people involved and develop productive and mutually beneficial relationships towards chemical risk reduction. You will find below a diagram with the rationale behind this approach and the sequence of tools provided, and a table with the list of available tools in this section.

STAKEHOLDER ID

STAKEHOLDER ENGAGEMENT

REVIEW OF ENGAGEMENT PROCESS

STAKEHOLDER MAP

STAKEHOLDER PROFILES

ENGAGEMENT METHODS
ENGAGEMENT PLAN
ISSUE PRIORITISATION

REVIEW OF ENGAGEMENT
PROCESS AND PLAN

ACTIVITY	TOOLS
Stakeholder ID: Identify your stakeholders	Tool 2.1 Map stakeholders
Stakeholder ID: Understand your stakeholders and how they like to engage	Tool 2.2 Profile stakeholders
Stakeholder engagement: Engage your stakeholders	Tool 2.3 Select the engagement method Tool 2.4 Plan the engagement
Stakeholder engagement: Prioritise stakeholder issues	Tool 2.5 Prioritise issues (ADVANCED TOOL)
Review the engagement process	Tool 2.6 Review the engagement process (ADVANCED TOOL)

E. BASIC TOOLS

Tool 2.1 Map stakeholders

The objective of stakeholder mapping is to identify the stakeholders that are important to the success of your business. Some stakeholders will potentially be exposed to or concerned about the chemical hazards and risks related to your products and activities. Some other stakeholders are clearly not relevant because they are not affected by what you do and they can not affect you. Others will be relevant but not necessarily important. So it is important to identify who your stakeholders are, whether they are relevant, and how important they are.

This tool is available for download in Word format on the Responsible Production CD

STEP 1: IDENTIFY STAKEHOLDERS, THEIR RELEVANCE AND IMPORTANCE

List all of your stakeholders, taking into account the table below, and rank them for their relevance in the success of your organization.

When listing your stakeholders, take into account the various organizations, institutions and groups of people you already engage with in your business (suppliers, buyers, employees, contractors, partners, transporters, etc.), as well as local and governmental authorities, local community groups, and others. These may include local emergency response providers, politicians, NGOs, investors etc.

Take also into account that some of your stakeholders will include people that you may not engage with normally, but that have a stake in your performance on chemical safety, as they may potentially be exposed to the chemical hazards and risks related to your products and activities.

STEP 2: EVALUATE THEIR RELEVANCE AND IMPORTANCE

Use the following ranking system and assign each stakeholder with a classification, from 1(lowest) to 4 (highest):
1 = they can only have a very limited influence on how you run your business
2 = they can influence what you do and how you do it in certain areas of your business
3 = they can have an influence both on how you run your business and your success as a business
4 = they can have significant impact on how you run your business and your success as a business

STAKEHOLDERS	RELEVANT		ORGANISATION AND CONTACT NAME	HOW IMPORTANT (1 TO 4)
	YES	NO		
Suppliers				
Buyers				
Local authorities				
Government				

Get the right people involved

STAKEHOLDERS	RELEVANT		ORGANISATION AND CONTACT NAME	HOW IMPORTANT (1 TO 4)
	YES	NO		
Community groups				
NGOs				
Employees (employee representatives)				
Transporters				
Partners / joint ventures				

STAKEHOLDERS	RELEVANT		ORGANISATION AND CONTACT NAME	HOW IMPORTANT (1 TO 4)
	YES	NO		
Investors				
Trade Unions				
Insurance Companies				
Retailers				
Others				

STEP 3: DRAW UP A LIST OF STAKEHOLDERS BY RELEVANCE AND IMPORTANCE

Now that you have a list of who your stakeholders are, you have to understand them. Tool 2.2 helps you do this.

Tool 2.2 Profile stakeholders

The objective of this tool is to make sure you really understand with whom who you are engaging. It is much more productive to engage with people and organizations when you understand them. Also, the more you know about them, the easier it is to decide how to engage with (which you will do with support from tool 2.3 below).

This tool is available for download in Word format on the Responsible Production CD

STEP 1: PROFILE EACH STAKEHOLDER	
Name the stakeholder group (e.g. suppliers, transporters, retailers, community, authorities, etc.):	
Name the stakeholder group representative(s):	
Issues important to this group	
How important is this group to you?	
What is their knowledge of the chemical hazards and risks posed by your products and operations?	☐ Leading opinion ☐ Lacking knowledge ☐ Good knowledge ☐ No knowledge ☐ Fair knowledge
What is the status of your existing relationship with this stakeholder group?	☐ Excellent ☐ More than 10 years ☐ Good ☐ 5 – 10 years ☐ Fair ☐ 2 – 5 years ☐ Poor ☐ 0 – 2 years ☐ No relationship ☐ No relationship
Do they have any important relationships / conflicts with other stakeholders?	
Scale at which they operate or exert their influence or are involved with your operations before an incident	☐ Global ☐ Regional ☐ National ☐ Provincial ☐ Local
Scale at which they operate or exert their influence or are involved with your operations during or after an incident	☐ Global ☐ Regional ☐ National ☐ Provincial ☐ Local
Other comments	

STEP 2: KEEP STAKEHOLDER PROFILES ON FILE AND UPDATE THEM AFTER EACH ENGAGEMENT.

Now that you know who you are dealing with you need to figure out the best way to engage them. This is what tool 2.3 helps you do.

Tool 2.3 Choose the type of engagement

Select the best way to engage with the stakeholders that you have now identified and profiled. Choosing the right type of engagement also depends on what you are hoping to achieve through engagement with each of the stakeholders you have identified.

Have in mind that stakeholders that you have ranked as having an influence on your success as a business (ranking of importance - 3), or as having a significant impact on your success as a business, should be actively engaged.

In addition, stakeholders who you have profiled as having a lack of knowledge on the chemical hazards and risks posed by your products and operations should be targeted by your communication efforts regarding the provision of risk information. This is particularly relevant if these stakeholders are facing some of the risks posed by your products or operations.

This tool is available for download in Word format on the Responsible Production CD				
STEP 1: SELECT METHODS OF ENGAGEMENT.				
Select the methods in the last column that best suit your goals, objectives, capacity to deliver and resource availability. You do not need to limit yourself to one method in any given category, nor consider them all.				
If you want to:	**And your goal is to:**	**Then you need:**	**To develop a relationship that is:**	**You should use the following engagement method**
Remain Passive	No engagement.	No active communication	Very limited	• No action
Monitor stakeholders concerns and views on the hazards and risks of your products and operations	Understand but not respond to stakeholders' views.	To track stakeholder communications	One-sided but with no connection.	• Media and internet tracking. • Second-hand reports from other stakeholders possibly via targeted interviews. • Receive concerns expressed through protest, letters, the media, websites etc.
Inform your stakeholders on the hazards and risks of your products and operations	Respond to issues and educate stakeholders.	Company to stakeholder communications with no invitation to reply.	One-sided with connection.	• Bulletins, letters. Brochures, reports and websites. • Speeches, conference and public presentations. • Open houses and facility tours. • Road shows and public displays. • Press releases, press conferences, media advertising, lobbying.

Get the right people involved

If you want to:	And your goal is to:	Then you need:	To develop a relationship that is:	You should use the following engagement method
Transact with stakeholders	Work together in a contractual relationship where one partner directs the objectives and provides funding.	Limited two-way communications where you set and monitor performance	Defined by the terms of a contractual agreement.	• Participate in 'Public Private partnerships' and Private Finance Initiatives, • Provide grants and donations • Use cause related marketing.
Consult stakeholders on their concerns regarding the hazards and risks posed by your products and operations	Gain information and feedback from stakeholders to inform your decision making	Limited two-way communications where the company asks questions and the stakeholders answer.	Short- or long-term and promises continued engagement	• Surveys • Focus Groups • Workplace assessments • One-to-one meetings • Public meetings and workshops • Stakeholder advisory forums • On-line feedback and discussion
Involve stakeholders for addressing their concerns on the hazards and risks posed by your products and operations	Work directly with stakeholders to ensure that their concerns are fully understood and considered in decision making.	Two-way, or group communications with stakeholders.	Long-term engagement	• Multi-stakeholder meetings • Advisory panels
Work with your stakeholders towards improving their understanding of the hazards and risks of your products and opera-tions, and towards implementing actions towards risk reduction	Partner with or convene a network of stakeholders to develop mutually agreed solutions and joint plans of action.	Two-way, or group communications with stakeholders where stakeholders work together to take action.	Long- term and allows direct participation in finding and implementing solutions to shared challenges.	• Joint projects • two-party or multi-party initiatives • Partnerships
Empower your stakeholders	Delegate decision making on a particular issue to stakeholders.	To give your stakeholders a formal role in the governance of your or delegate decisions to stakeholders.	Long-term shared governance	Integration of stakeholders into Governance Structure. (eg. as board members, shareholders or on committees)

STEP 2: ENGAGE YOUR STAKEHOLDERS ACCORDING TO THE METHOD SELECTED

Tool 2.4 Plan the engagement

The objective of this tool is to plan each engagement so that you have the best chance for a successful and productive engagement. The idea is to make sure you have the essentials right.

This tool is available for download in Word format on the Responsible Production CD			
STEP 1: IDENTIFY A GOAL AND METHOD FOR EACH ENGAGEMENT			
Select a goal for engaging each stakeholder (see 2nd column of tool 3 above)			
Select one or more methods of engagement (see last column of tool 3 above)			
STEP 2: ASSIGN RESOURCES, RESPONSIBILITIES AND A TIMEFRAME FOR ENGAGEMENT			
	Resources	**Responsibility**	**Timeframe**
Do you have any targets (e.g. number of participants, participant satisfaction)			
Do you need to send out invitations or publicity?			
Do you need to send out any materials?			
Where will it be and what is the date?			
Do you need to provide transport, food, lodging etc.?			
Do you need any equipment?			
Will any participants be reimbursed?			
What is the agenda or plan for the event?			
Who will do what during the event (e.g. chair the meeting, give a presentation, take notes etc)?			
What feedback will you give to participants?			
STEP 3: ASSESS ENGAGEMENT RISKS			
What are the risks related to this event?			
What will you do if things go wrong?			

F. OTHER SOURCES FOR INFORMATION AND REFERENCES FOR FURTHER READING

Chemical Sector in Thailand

- UNEP/AccountAbility Stakeholder Engagement Manual (October, 2005)
- AA1000 Stakeholder Engagement Standard (2005)

Mining sector in Peru

- UNEP/AccountAbility Stakeholder Engagement Manual (October, 2005)
- AA1000 Stakeholder Engagement Standard (2005)
- ICMM/World Bank Community Development Toolkit (2005)

Section 3 Develop your plan

This section is relevant to how you respond to your understanding of the most important or material chemical issues. Your success as an organisation will depend on making the right response. Based on the understanding you have gained (by applying the tools in the first two sections) regarding your chemical hazards and risks and relevant stakeholders you will now be in a position to develop the best possible response – taking into account where you are as an organisation and what it will take to succeed in improving your safety performance and in reducing the risks posed by your products and operations. Section 3 focuses upon planning for success.

A. WHAT?

Plan the appropriate responses to your chemical hazard issues and associated impacts, then decide when, how and with what resources you are going to meet your objectives.

B. WHY?

1. Your response – the way you manage chemical hazards and associated risks - can have a positive affect on the health, safety and livelihoods of others, as well as on the quality of the environment
2. Your response can have a positive affect on your safety performance and success.
3. You must respond in the most efficient and productive way.
4. You must respond in a way that best improves your competitive position.
5. You must ensure that all staff understand and have the capability to implement the response.
6. You must make sure you are ready to respond in case anything goes wrong.
7. Hazardous chemical management is never achieved without planning.

C. WHEN?

1. Develop and maintain your plan based upon an understanding of the chemical hazards and risks you have previously identified, and based upon the results of your consultations with stakeholders. Otherwise you may not be taking the correct action and may waste a lot of time and effort.
2. Your plans must be based upon a clear understanding of what is hazardous, what needs to be done for reducing risks, and when this needs to take place.
3. Do it periodically. Plans should be repeated on at least an annual basis. Some organisations have long term plans and annual plans. Some organisations have rolling three year plan (a three year plan where as one year is finished a plan for a new year is added).

Develop your plan

Knowing your "hazard hotspots" (tool 1.4) is the first step towards identifying opportunities for reducing risks and saving costs. By carefully evaluating your operations and business practices at your "hazard hotspots" you will find several opportunities for immediate action that will not only reduce chemical risks to workers and the environment but will also help you reduce your waste and save money

Planning is not a solitary activity. Involve the right people. This could be as simple as a staff team, but it could also involve your business partners, outside experts, consultants and stakeholders from local and governmental authorities, or the community. The objective is to develop the best plan possible to reduce the risks posed by your products and operations along your value-chain and in the community, so you must use the resources that will achieve that.
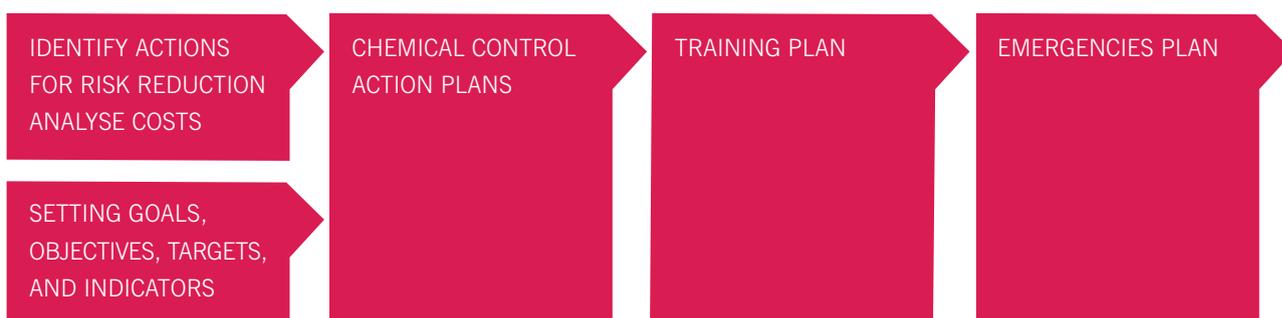
In addition to understanding the issues and involving the right people it is also helpful to understand the business case (see the advanced tool in the Appendix). This is more than just the cost analysis. The business case looks at the matters which drive an organisation to act in a certain way. They include impacts on your business of all types, from financial impacts, to legal impacts to the impacts of society, the environment and your competitors. Understanding what is driving you to change will help to identify the type of action that is needed.

The actual planning process must include setting goals, objectives and targets, developing the plans you need to meet these goals, objectives and targets, then making sure you provide the resources to achieve them. You should also ensure that your staff possess the correct skills and knowledge to do what is required. It is also important to be prepared in case anything goes wrong.

You will find below a diagram with the rationale behind this approach and the sequence of tools provided, and also a table with the list of available tools in this section.

IDENTIFY ACTIONS,
UNDERSTAND THE COSTS
AND SET OBJECTIVES,
TARGETS AND
INDICATORS

DEVELOP CHEMICAL CONTROL ACTION PLAN, TRAINING PLAN, AND
EMERGENCIES PLAN

IDENTIFY ACTIONS FOR RISK REDUCTION ANALYSE COSTS	CHEMICAL CONTROL ACTION PLANS	TRAINING PLAN	EMERGENCIES PLAN
SETTING GOALS, OBJECTIVES, TARGETS, AND INDICATORS			

ACTIVITY	TOOLS
Identify action for Risk Reduction and understand the costs	Tool 3.1 Identify actions for Risk Reduction
	Tool 3.2 Prevention and Risk Reduction Cost Analysis
Set chemical control objectives and targets	Tool 3.3 Setting goals, objectives, targets and performance indicators
Prepare chemical control action plans (assessment of current against best practice)	Tool 3.4 Chemical Control Action plans
Develop training needs assessment and plan	Tool 3.5 Training plan
Develop emergencies plan	Tool 3.6 Emergency plan
Identify action for Risk Reduction	Tool 3.7 Prevent and reduce risk at site – General (ADVANCED TOOL) Tool 3.8 Prevent and reduce risk at site – Specific: Off-Loading and Transfer of Chemicals (ADVANCED TOOL) Tool 3.9 Prevent and reduce risk at site – Specific: Process Areas (ADVANCED TOOL) Tool 3.10 Prevent and reduce risk at site – Specific: Storage of Chemicals (ADVANCED TOOL) Tool 3.11 Prevent and reduce risk Offsite - Specific: Transport of Chemicals (ADVANCED TOOL)
Build and communicate the business case	Tool 3.12 Business Case (ADVANCED TOOL)

E. BASIC TOOLS

Tool 3.1 Identify actions for Risk Reduction

The objective is to identify ways to prevent and reduce risks posed by the hazards you have mapped and prioritised in Section 1. You will find below a simple approach for identifying the correct action to take regarding risk reduction taking into account the information you already gathered and analysed by applying previous tools. For a more detailed and activity/process specific approach through cause analysis, please revert to advanced tools 3.7 to 3.11 in the Appendix. For a more comprehensive approach to the identifying the specific action to take regarding risk reduction, please revert to the Good Practice and Procedures checklist, also included in the Appendix.

This tool is available for download in Word format on the Responsible Production CD

STEP 1: REVIEW THE HAZARDS YOU HAVE IDENTIFIED

Go back to the list of hazards and hazard hotspots you have identified and the risks you have prioritised by applying the tools in Section 1

STEP 2: IDENTIFY PREVENTATIVE MEASURES

Discuss with workers, supervisors, business partners and other external stakeholders (where appropriate) possible preventive actions

STEP 3: CHECK OPPORTUNITIES FOR IMMEDIATE RISK REDUCTION ACTIONS

Review your process flow chart and, taking into consideration stakeholder concerns, write down your observations on a worksheet, noting all steps where you may be able to implement actions for risk reduction

Pay particular attention to opportunities for reducing risk at source:

☐ Eliminating hazards (avoiding toxic, flammable and explosive substances; eliminating or replacing chemicals with less hazardous ones etc.)

☐ Enclosure or isolation of hazards (enclosing equipment and providing secondary containment; separating hazardous processes and hotspots from other processes, areas and ignition sources; segregating packages and containers in accordance with applicable segregation requirements both in storage and in transport; ensuring adequate and safe storage of hazardous chemicals; reducing losses of chemicals during operations; restricting the amounts of chemicals kept in certain areas)

☐ If applicable, ventilating areas where the hazards are located (provision of general and local ventilation to remove or reduce concentrations of hazardous fumes, gases, vapours and mists)

☐ Improve housekeeping measures and waste disposal routines

☐ Promoting the use of personal protection equipment where needed, together with the necessary training and maintenance.

☐ Raising awareness of hazards and risks (inform workers about hazards and properties of hazardous chemicals; make available Material Safety Data Sheets MSDS, first aid procedures and other informational materials on chemical safety in the language of the workforce)

Also pay attention to opportunities for avoiding proximity to the threatened objects (people, environment, and property) you identified when applying Tool 1.3 in Section 1

☐ Keep non-authorized personnel away from hazard hotspots (improve awareness of hazards and risks; use hazard symbols, labels and warning signs; lock areas of restricted access)

☐ Prevent public access to hazardous chemical storage areas (fence off or lock storage areas; appoint a responsible person to check storage facilities regularly; make sure that entry into hazardous chemical storage areas is only allowed to competent persons)

☐ Avoid trespassing (guard and lock your facilities)

☐ Implement emergency alarms

☐ Re-evaluate routes used for the transport of hazardous chemicals (change routes whenever possible to avoid driving through or in the vicinity of densely populated areas, schools and hospitals, natural protected areas, heritage areas, etc.)

☐ Whenever applicable and available, provide police or fire service escorts when transporting hazardous chemicals through communities or areas which present maximum risk

☐ Avoid shipments of high-risk chemicals during rush hours to reduce accident probability and the number of people exposed to risk

☐ Consider temporary restrictions on dangerous goods traffic during hazardous weather conditions: low visibility due to fog, high winds, or slick roads due to heavy rain, snow or ice.

Tool 3.2 Prevention and Risk Reduction Cost Analysis

The objective is to understand the financial costs and benefits related to chemical safety initiatives, in particular the actions you have identified for risk reduction and for managing chemical related hazards, risks and associated impacts. Costing requires a formulation of what actions are required, so list the risk reduction actions you have identified by applying Tool 3.1 above or the more detailed advanced Tools 3.7 to 3.11 that you can find in the Appendix.

This tool is available for download in Word format on the Responsible Production CD				
STEP 1: IDENTIFY COSTS AND SAVINGS				
For each preventive or risk reduction action identified earlier, list the following costs and savings. *Note: there will not necessarily be a figure for every box.*	One time capital cost	Ongoing operating cost (per year). Calculate the average per year, based on annual estimates	One time capital saving	Ongoing operating saving (per year). Calculate the average per year, based on annual estimates
Facilities (repairs, renovations, new build, demolition etc)				.
Non-chemical materials				
Chemicals				
Warehousing and storage				
Waste management				
Transporting				
Human resources at all levels (time related to new, deleted or revised tasks, procedure development, training etc)				
Equipment (new, repairs etc)				
Legal (including insurance)				
Remediation				

Support services (testing, verification etc)				
Total				

STEP 2: RETURN ON INVESTMENT	
Subtract one time savings from one time costs = capital investment	
Subtract ongoing costs from ongoing savings = impact on annual operating cost	
Divide capital investment by impact on annual operating cost = years to return on investment	

Notes:
- *If there is no or negative capital investment you must simply calculate the annual operating cost increase or savings.*
- *If there is no or negative operating cost savings then there will be no return on investment through operations. The return on investment will have to be gained through increased price of the product, through grants, or other government incentives.*
- *The most significant savings can only be understood in relation to the actual cost of an accident. So in addition to considering return on investment for capital and operational investments it is also useful to understand these investments in relation to the potential cost of an accident. This can be done through scenario building, taking into account the accident scenarios you have identified when applying Tool 1.3*
- *Costs of prevention are mostly direct, whether they are in training, technical or organisational safety measures. Costs of accidents are often diverse in their impact. They are quite often social costs and are not reimbursable or insurable.*

Tool 3.3 Setting goals, objectives, targets, and performance indicators

This tool will help you set goals, objectives and targets, and assist with developing performance indicators. The reason for setting objectives goals and targets is to provide the basis for sound management. What gets measured gets done. You will need to draw on the risk reduction actions you have identified with Tool 3.1 or with advanced tools 3.7 to 3.11 (see Appendix).

This tool is available for download in Word format on the Responsible Production CD		
SETTING GOALS, OBJECTIVES		
STEP 1: ESTABLISH YOUR GOAL This is the overall strategic goal for the organisation in relation to chemical safety management.	1 = strongly disagree 2 = disagree 3 = neither agree nor disagree 4 = agree 5 = strongly agree	
	Score	**Explain**
Chemical safety management is related to the company's strategic priorities.		
Improved chemical safety management can effectively be aligned with the company's current business goals		
Improved chemical safety management can help to address your company's current key business challenges		
Your company has a responsibility to demonstrate 'best in class' performance, as per any code of practice or sector policy it subscribes to		
Average Score (total divided by 4)		

Scores:

4.2 – 5   Your goal should be to become a learning organisation and to demonstrate 'best in class' and to show leadership in the sector.

3 – 4.1   Your goal should be to become a learning organisation and to have effective systems and processes in place to effectively manage all chemical hazards and related risks and impacts.

1 – 2.9   Your goal should be to become a learning organisation; to address the highest priority issues at the moment and establish systems that allow for continual improvement over time.

STEP 2: SET OBJECTIVES

Objectives are commitments regarding what you will manage and how you will manage. They can cover a number of impact or risk areas.

- Set overall objectives for the following
  - Procurement
  - Storage
  - Process
  - Marketing and sales
  - Transport
  - Use
  - Disposal
- Objectives should be statements such as:
  - To ensure that all chemical hazards and associated risks and impacts are identified and fully understood
  - To ensure that all chemicals are stored, processed, transported and used according to approved plans and procedures
  - To ensure that all staff are adequately trained on the safe handling of chemicals
  - To ensure that the appropriate risk information is made available to business partners and other stakeholders
  - To ensure that all incidents involving hazardous chemical substances are recorded and reported to the responsible person immediately
  - To ensure that all incidents involving hazardous chemical substances are responded to and causes addressed immediately according to approved procedures
  - To ensure that response procedures are reviewed and improved after all incidents

STEP 3: SET TARGETS

Targets are commitments related to specific actions, risks and impacts.

- Refer to the hazard hotspots and associated risks you have identified in Section 1. Review the opportunities for immediate risk reduction actions you have spotted

- Set targets using SMART (Specific, Measurable, Accurate, Reliable, Timely) indicators for all relevant risks, impacts and actions related to chemical hazards (see Step 4 below).

- You may want to set targets for risks, impacts and actions related directly to your products and operations:
  - Availability of risk information, risk awareness and training
  - Substitution of hazardous chemicals
  - Reducing inventories of hazardous substances both in process and in storage
  - Selection of operating/handling conditions to minimise risk, like reducing temperature and pressure
  - Protection against vessels overfilling, ensuring containment and general prevention of chemical spills
  - Reducing chemical waste, loss of chemicals, and quantities of spoiled or expired chemicals
  - Prevention of dust clouds
  - Adequate labelling and sealing of packages/containers
  - Prevention and elimination of damaged packaging

- Proper use of packaging
- Implementation and frequent testing of emergency preparedness and response
- Fire protection, risks of fire, action against explosions and other related incidents
- General storage conditions
- Health problems
- Availability and use of proper tools and personal protection equipment

These targets should be clearly stated in your Chemical Control Action Plans (see tool 3.4 below). Action plans should ensure that objectives and targets can be met.

Now review your stakeholders list and select the ones you have profiled as having a lack of knowledge regarding the chemical hazards and risks posed by your products and operations, whilst actually being exposed to these.

- For the stakeholders with whom you are doing business and who are part of your value-chain (suppliers, transporters, distributors, customers, end users) you may want to set targets for risks, impacts and actions related to:
  - Availability of risk information to suppliers, transporters, distributors, customers, and end users
  - Risk awareness and training of direct business partners
  - Improvement on package design for improved safety in chemicals handling
  - Establishing hotlines or other systems for customer assistance
  - Emergency preparedness and response

- For other relevant stakeholders you may have identified - as well as local and governmental authorities, community groups, academic and technical institutions and NGOs that have a stake in your chemical safety performance - you may want to set targets for risks, impacts and actions related to:
  - Availability of risk information to the local communities and general public, regarding your products and operations
  - Complaints received from the local community/general public regarding the safety of your products and operations
  - Participation in community panels and meetings
  - Dialogue with local people/groups in the community (such as housing areas, schools, nursing homes, temples, commercial centres, etc.)
  - Requests, warnings and/or fines from the authorities
  - Co-operation with the authorities and local officials on chemical safety issues
  - Establishing a system or procedure for handling inquires and complaints from the public/the community
  - Emergency preparedness and response

SETTING PERFORMANCE INDICATORS

STEP 4: SET PERFORMANCE INDICATORS

You must find a way to measure your progress towards each of the targets you have set yourself. The best way to ensure that you will be able to measure your progress is to make sure that there is a way to quantify each of the targets over a time frame and/or assign them a performance level.

Please find below some examples of indicators you may wish to consider for targets you have set related to the risks of your products and operations:
- Number of internal risk awareness campaigns, training sessions, or workers trained on chemical safety issues
- Number of hazardous chemicals replaced
- Quantity of hazardous chemicals stored
- Changes to operating procedures for improving chemical safety
- Number of chemical raw materials with/without Material Safety Data Sheets (MSDS)
- Number of chemical products with/without Material Safety Data Sheets (MSDS)
- Number of unlabelled containers
- Number of storage vessels containing hazardous substances with no containment or overfilling protection systems
- Extent of warehouses containing hazardous substances have secondary containment
- Capacity of storage facilities/warehouse/site to contain contaminated fire water
- Quantity of chemical and package waste sent to disposal or stored at site
- Number of emergency drills
- Extent of planned provisions for accidents occurring off-site (surrounding area, nearby facilities, transport)
- Number of accidents and near-misses and their severity
- Number of injuries and fatalities from chemical accidents
- Costs related to chemical accidents (loss of product, liabilities, fines, property damage)

Please find below some examples of indicators you may wish to consider for additional specific targets related to chemical accident prevention:
- Number of emissions (sudden and accidental releases)
- Number of accidents related to unforeseen risks (not identified in the Risk Assessment)
- Number of accidents attributed to contractors or visitors as a root or contributing cause
- Number of accidents reported involving raw materials being supplied to the company (upstream)
- Number of accidents reported involving the company's products (downstream)

Please find below some examples of indicators you may wish to consider for targets you have set related to awareness raising and training:
- Extent that workers and management wear the appropriate personal protection equipment (PPE) for the hazards involved
- Extent that relevant staff are trained in Risk Assessment
- Extent that workers are trained on chemical hazards and risk, and on emergency response

Develop your plan

Please find below some examples of indicators you may wish to consider for targets you have set related to the people with whom you are doing business and who are part of your value-chain:

- Extent of participation in industry associations and programmes that address safety and environmental-related issues
- Extent of participation in local networks that address safety-related issues (mutual aid groups and safety circles)
- Extent other companies provide support during an emergency response or exercise
- Requests for risk information from suppliers, transporters, distributors, customers, and end users
- Number of external risk awareness campaigns, training sessions, or business partners trained on chemical safety
- Number of complaints and of calls to customer assistance hotlines
- Number of emergency drills involving business partners
- Number of accidents and near-misses involving your business partners, and their severity
- Number of injuries and fatalities from chemical accidents involving your business partners
- Costs related to chemical accidents (loss of product, liabilities, fines, property damage)

Please find below some examples of indicators you may wish to consider for the targets you have set regarding your relations with local and governmental authorities, local community groups, academic and technical institutions and NGOs that have a stake in your chemical safety performance:

- Participation in voluntary initiatives promoted by the authorities
- Extent and quality of support to public authorities and others involved in off-site preparedness planning
- Requests of risk information from representatives of local communities and the general public regarding your products and operations
- Number of inquiries and complaints received from the local community/general public regarding the safety of your products and operations
- Number of requests, warnings and/or fines from the authorities concerning the safety of your products and operations
- Number of emergency drills involving local and governmental authorities, and the community
- Number of accidents and near-misses involving the community/general public, and their severity
- Number of injuries and fatalities from chemical accidents involving the community/general public

Tool 3.4 Chemical Control Action plans

The objective is to develop a systematic chemical control action plan(s) with clear responsibilities and deadlines for implementation. The plan(s) should account for all hazard information and possible risk reduction actions previously identified in Tool 3.1 and Tools 3.7 to 3.11 as well as for the related targets you have set by applying Tool 3.3 above. These must of course also take into consideration any legal requirements (see Tool 1.5).

This tool is available for download in Word format on the Responsible Production CD
STEP 1: GATHER EXISTING INFORMATION
Gather the information you have collected and developed on hazards, control measures, possible risk reduction actions, and legal obligations related to the control of chemicals and costs (draw on information generated using the tools you applied on Section 1)
STEP 2: DECIDE HOW MANY CHEMICAL CONTROL ACTION PLANS YOU WILL NEED.
Distinguish between one-off actions and periodic actions
Decide if it will be more useful to create one or more than one plan, for example, you may want to have separate plans for (i) all high priority/immediate one-off actions, (ii)) normal priority one-off actions, and (iii) periodic/repetitive actions such as the ones related to maintenance, monitoring or reporting/legal obligations
In most organisations, obtaining senior management endorsement for one single chemical control action plan will be easier. It will also be easier to follow-up one single plan.
STEP 3: CREATE YOUR CHEMICAL CONTROL ACTION PLAN(S)
Plan(s) should contain the following elements:
• a list of the 'hot spots' you identified (refer to the notes you made during walkthroughs when applying the tools in Section 1)
• a description of the measures that you propose for dealing with each hazard
• a definition of clear and realistic objectives and targets that you want to achieve with this measure, indicating the anticipated improvement or benefit in terms of optimising chemical use, reducing health risks for workers, reducing environmental damage, improving product quality (refer to Tool 3.3 above)
• a description of the specific activities to be undertaken to achieve the desired improvement or benefit
• the expected costs associated with implementation of the action, taking into account investment costs, maintenance/periodical costs, labour costs

•	the person who is responsible for taking action and monitoring the results
•	the time period within which action should be completed
•	the expected results (indicates the eventual benefits achieved vis-à-vis cost savings, risk reduction, etc.)

STEP 4: REVIEW YOUR PLAN FOR CONSISTENCY AND EFFECTIVENESS

Review question	Notes
Have you reviewed your plan carefully before trying to seek endorsement from senior management?	
Have you discussed draft plans with all the people that may be involved, particularly the ones that you believe should be responsible for each assigned action? In particular, try to get their pre-agreement on the deadlines you will be proposing to your senior management.	
Have you consulted the people who are directly involved in handling chemicals about the proposed actions in order to understand the implications for changing procedures?	
Have you thought about possible consequences – both positive and negative – before implementing action? Have you checked that the proposed actions are sufficient to meet the stated objectives and targets?	
Have you verified that the actions to be undertaken are clearly understood by those who will be involved?	
Have you assigned clear responsibilities for each action? Give the responsibility for taking action to specific individuals. If no individual is responsible, nothing will happen!	
Have you made sure that those designated as responsible have the needed expertise and authority to carry out the proposed action?	
Have you been specific about who must do what and how?	

Have you established a realistic time-frame for who should do what by when?	
Have you made provisions in your plan so that all workers affected by changes to the current way of doing things will have an opportunity to be properly informed and trained in the new procedures?	

STEP 5: GET ENDORSEMENT

Present the agreed plans to your senior management, clearly explaining the expected benefits from implementing the actions proposed

Prepare yourself beforehand and be ready to provide justification for each proposed action. Be particularly attentive to possible questions like:

Why should we implement this action now and not next year?

Can we partially implement this action and still obtain the expected results?

Are you sure of the expected range of costs?

Did you take into account idle time? And warehouse cost?

How many suppliers did you consult?

Will there be any overtime hours involved?

You will need to involve one of our permanent contractors/suppliers to implement this action. Are you taking their assistance for granted? Have you checked what extra costs will be involved?

Have you discussed the feasibility if this action with this person?

Why have you proposed him/her for the job?

Why are you proposing this action to start 6 months from now? We are presently non-complying. What are the costs of non-compliance with this obligation (contractual, reputational, legal) vis-à-vis the investment and operational costs of this action now? Have you taken into account potential fines, or loss of customers/orders?

Other:_____ (list possible questions you may be asked)

Now that you have identified what is you have to do and now that you possess control plans in place to achieve your objectives and targets, you need to develop the capacity to succeed.

Tool 3.5 Training plan

The objective of the training plan is to makes sure that training needs within chemical safety management are identified and met. Training can address basic skills and knowledge as well as job specific skills and knowledge, that is, skills and knowledge related to specific procedures required to do a certain job in such a way that chemical safety will be assured. This approach for developing a training plan addresses both requirements.

This tool is available for download in Word format on the Responsible Production CD
STEP 1: TRAINING NEEDS IDENTIFICATION
Start with your organisational chart and/or list of personnel. If you do not have an updated chart or list, check your payroll list or create one.
Identify and list all the functions that are directly and indirectly related to handling of chemical products. You may want to check your Hazard Hotspots Map to assist you with identifying the functions within your organisation that are directly related to chemical handling – this should be your priority. You may also find that many other functions will have at least an indirect relation to the handling of chemicals (responsibilities in procurement, marketing and sales, distribution, transportation, etc).
List all of the skills and knowledge needed (both basic and job specific) for each selected function.
Evaluate the skills and knowledge of each person responsible for each function (you may have more than one person responsible – take into account work shifts, temporary and subcontracted personnel). This evaluation can be done using a simple check list made up of the skills and knowledge required. If you are not totally sure of what knowledge should be required for each function, have in mind that each person should be trained in order to clearly understand: • the operating instructions of the equipment they must use • the hazards and risks of the equipment and of the chemical substances they are handling • information on MSDS (where appropriate), labels, user safe-handling and environmental impact of the chemical substances they are handling, including what to do in case of an accident or emergency • the need for good practices on chemical handling, use, recycling and disposal, including a general knowledge on legal and other requirements related to the tasks they are responsible for
List the skills and knowledge gaps for each person.
Periodically review training needs – when new procedures are introduced, when new staff are hired, when best practice changes etc.
STEP 2: DEVELOP A TRAINING PLAN – BASIC SKILLS AND KNOWLEDGE
• Aggregate the basic skills and knowledge gaps
• Categorise or group the basic skills and knowledge gaps

• Identify existing training offers that address the basic skills and knowledge gaps
• If no existing training offers exist, engage a qualified training professional, or appoint a qualified staff person, to develop the required training.

• Training materials should include:
   • Learning objectives
   • Curriculum
   • Learning methods
   • Approved content
   • Evaluation methods
   • Qualified instructors should be used.
   • Schedule and deliver the training.

STEP 3: DEVELOP A TRAINING PLAN – JOB SPECIFIC SKILLS AND KNOWLEDGE

• Aggregate the job specific skills and knowledge gaps
• Categorise or group the job specific skills and knowledge gaps
• Engage a qualified training professional, or appoint a qualified staff person, to develop the required training.

• Training materials should include:
   • Learning objectives
   • Curriculum
   • Learning methods
   • Approved content
   • Evaluation methods

• Qualified instructors should be used.
• Schedule and deliver the training. Note: formal training should be integrated with on-the-job training.

Tool 3.6 Emergency plan

The objective is to improve emergency preparedness through a multi-stakeholder approach to the development of chemical emergency plans, based upon public participation and community engagement.

This tool is available for download in Word format on the Responsible Production CD

PRELIMINARY STEPS

PRELIMINARY STEP 1: REVIEW THE HAZARDS YOU HAVE IDENTIFIED
Refer to the list of hazards and hazard hotspots you have developed by applying the tools in Section 1.

PRELIMINARY STEP 2: CHECK WHO YOUR POTENTIAL STAKEHOLDERS MAY BE IN AN EMERGENCY
Refer to the list of relevant stakeholders you developed by applying the tools in Section 2.
Identify the stakeholders that should be involved in the development of an integrated emergency plan (on-site and off-site).

PRELIMINARY STEP 3: REVIEW EXISTING EMERGENCY PROCEDURES AND PLANS
Assess the emergency procedures already in place at your site.
Identify existing community emergency plans, as well as common emergencies practices/procedures/plans shared with neighbour companies.
Check for the existence of emergency procedures and/or plans of your contractors, suppliers, and transporters.

PRELIMINARY STEP 4: RAISE AWARENESS AND COMMITMENT TO THE APELL PROCESS
Develop familiarity with the APELL process **www.unep.fr/scp/sp/process**
Raise awareness among your stakeholders and gain commitment through internal company seminars and community workshops.
Establish an informal Co-ordinating Group to get planning and communication underway.
Run an internal company seminar, as this may be the best way to ensure there is adequate management understanding of the need, benefits and risks of launching an APELL process and to ensure that resources are available to do it properly.

The internal company seminar should cover, in a preliminary way, such things as:

- the operation's hazards and potential risks
- some accident scenarios and their potential consequences
- regulatory or code requirements
- vulnerable communities
- adequacy of current plans
- the APELL process

Raise awareness and gain commitment in the community by conducting an APELL workshop involving the relevant stakeholders.

Establish an APELL Co-ordinating Group involving representatives of the relevant stakeholders (you should have been able to identify who your relevant stakeholders are by applying the tools in Section 2)

THE 10-STEP APPROACH OF THE FORMAL APELL PROCESS

STEP 1: IDENTIFY EMERGENCY RESPONSE PARTICIPANTS AND ESTABLISH THEIR ROLES, RESOURCES AND CONCERNS

Compile a list of potential emergency response participants.

Obtain copies of existing emergency plans and review these in order to identify any further emergency response agencies and participants.

Establish concerns, e.g. about deficiencies in resources or weaknesses in response capabilities.

Prepare a brief description (perhaps a spreadsheet) of all emergency participants, their roles and resources, e.g. personnel, equipment, special knowledge, facilities, etc. Pay particular attention to understanding and documenting the boundaries between the different providers, gaps, overlaps and any unclear roles and responsibilities.

STEP 2: EVALUATE THE RISKS AND HAZARDS THAT MAY RESULT IN EMERGENCY SITUATIONS IN THE COMMUNITY AND DEFINE OPTIONS FOR RISK REDUCTION

Possible accidents should be identified, along with the probability of their occurrence and possible consequences. This enables scenarios to be constructed and priorities to be set for planning purposes. Simultaneously, apparent risk reduction options should be defined and pursued at this stage.

The Co-ordinating Group should oversee the compilation of a list of hazards and potential risks. For this, information already available on hazard hotspots and related risks should be used (refer to the tools applied on Section 1)

Work must be done to explore and comprehend the range of hazards which exist, in addition to focusing on the obvious, and in relying in the information already collected by applying other tools. For comprehensive hazard identification, available information on hazard hotspots should be completed through joint exercises involving all stakeholders aimed at identifying chemical hot spots along transport routes. This will allow to better identify and understand chemical hazards and risks associated to transportation, and to produce a comprehensive community hazard map with the participation of all the relevant stakeholders.

Assess the potential severity of the impact, for each possible accident, e.g.:
- the size and nature of potential area affected
- number of people at risk
- type of risk (physical harm, toxic, chronic)
- long term effects
- impacts on environmentally sensitive areas
- consequential secondary risks and impacts
- the probability of occurrence should be assessed. Points to consider include:
  - probability of individual events
  - probability of simultaneous events
  - complications from unique environmental considerations

The Co-ordinating Group should agree on key scenarios that could reasonably be expected to occur or that the community is most concerned about and use these in the planning process.

As the hazards are identified and their probability and consequences are examined, some areas of risk may be identified that can be readily eliminated or cost-effectively pursued. Appropriate action should be taken as soon as possible, and the chemical control action plans developed by applying Tool 3.4 above should be updated.

STEP 3: HAVE PARTICIPANTS REVIEW THEIR OWN EMERGENCY PLAN, INCLUDING COMMUNICATIONS, FOR ADEQUACY RELATIVE TO A CO-ORDINATED RESPONSE

Contact the participants identified in Step 1, outline the priority emergency scenario(s) and ask them to evaluate their plans against these scenarios.

The Co-ordinating Group should review the results of the separate evaluations to determine the overall strengths and weaknesses of the current status of a co-ordinated emergency response.

STEP 4: IDENTIFY THE REQUIRED RESPONSE TASKS NOT COVERED BY EXISTING PLANS

From the reviews carried out in Steps 2 and 3 it can be determined whether existing emergency plans adequately address the identified risks and emergency scenarios. Additional tasks that need to be undertaken to complete or improve the plan can be identified. This step requires a thorough definition of what more must be done, with input from emergency response participants and Co-ordinating Group members.

Identify missing or weak elements or tasks not being covered by any group, in the context of an integrated response.

Determine the importance of these elements to the function of the participant (e.g. the fire service may not have the proper equipment to fight some chemical fires; correct antidotes may not be available at nearby hospital, etc).

Inter-relationships, responsibilities and communication plans are key items for the Co-ordinating Group to discuss. For an effective integrated response, the importance of establishing a clear command structure cannot be overstated.

STEP 5: MATCH TASKS TO RESOURCES AVAILABLE FROM THE IDENTIFIED PARTICIPANTS

Each task defined in Step 4 must be assigned by the Co-ordinating Group to the participant who can best address that aspect.

Assigning the tasks should take into account authority, jurisdiction, expertise or resources.

Evaluate each of the required extra tasks separately and, using the list of participants from Step 1, determine who is most likely to be able to complete the task. Assess benefits or problems associated with a particular participant completing a particular task.

Discuss the tasks with the participant to determine willingness to undertake it and their resources and experience that will ensure the task is completed, or identify problems that may make it inappropriate or difficult for them to do so.

Determine if any new tasks, problems or constraints will arise as a consequence of completing those already identified.

Monitor the successful completion of each task.

STEP 6: MAKE CHANGES NECESSARY TO IMPROVE EXISTING EMERGENCY PLANS, INTEGRATE THEM INTO AN OVERALL COMMUNITY PLAN AND GAIN AGREEMENT

By completing Steps 4 and 5, all resource-related problems should be identified and resolved.

Integrating the plans will reveal overlapping responsibilities and complex interfaces between agencies

Prepare a draft integrated plan

Ensure that the newly developed plan is consistent with any regional disaster plan, also ensure its consistency with legislation and any codes that are relevant to emergency planning and community engagement.

Check that the plan is robust in relation to all previously identified risks and emergency scenarios, and in relation to response tasks, resources, roles and accountabilities, etc., to ensure there are no weak components.

Conduct a role-playing exercise to test the plan, with key participants describing how they would respond to a variety of different emergency scenarios.

Identify any weaknesses in the plan and, if necessary, repeat the steps above to resolve these problems.

Revise the plan as often as necessary until all deficiencies are eliminated and the members of the Co-ordinating Group agree it is appropriate and workable.

Ensure that any individual plans that the various providers and organisations may retain to focus their own particular responses are retrofitted to the integrated plan and that inconsistencies are not allowed to creep in.

Develop your plan

STEP 7: COMMIT THE INTEGRATED COMMUNITY PLAN TO WRITING AND OBTAIN ENDORSEMENT FOR IT AND RELEVANT APPROVALS

The integrated plan, as agreed by the Co-ordinating Group needs to be documented in final form and endorsed by the community, local government or other appropriate agencies.

Use a small group to write the plan in its final format.

Prepare a standard presentation to be given to the community, government officials or others who may have a role in its approval or implementation.

Prepare notices, instructions, posters, etc. for use at the site and by other organisations and individuals.

Make presentations, hold meetings and review sessions and obtain endorsement of community leaders and relevant officials.

Make arrangements for any written agreements that may be necessary between participants of the APELL process, such as mutual aid, notification formats, use of the media, specialized response personnel and equipment.

Agreements are also needed when private companies are to provide particular emergency assistance such as technical expertise or specialized equipment.

STEP 8: COMMUNICATE FINAL VERSION OF INTEGRATED PLAN TO PARTICIPATING GROUPS AND ENSURE THAT ALL EMERGENCY RESPONDERS ARE TRAINED

Once the plan has been endorsed by those groups whose 'sign off' was appropriate or desirable, the details of it need to be communicated to the members of the emergency provider groups so that they are aware of the format of the plan, of their collective and individual responsibilities, and of any training they will require, such as the use of new equipment, new procedures, etc.

Operating Procedures covering aspects of the Plan should be available to all staff that may need them.

Compile a list of participating groups who will need to know more about the integrated plan.

Make presentations to these groups to explain the plan, their roles and the type of training they should institute or receive.

Update procedures.

Identify those who must be trained and update the Training Plan you developed by applying Tool 3.5 above; develop and carry out training sessions where necessary. In cases where the local authorities are not equipped to train key people, join with other stakeholders and share resources to undertake this.

Ensure notices and posters are displayed in appropriate locations.

Complete field exercises for hands-on training in monitoring, use of communications, traffic control, evacuation procedures, etc.

Complete comprehensive workshops, including emergency scenarios, to train leaders in co-ordination and communication among participants.

Focus on communication and media training for principal spokespersons in emergency response agencies and within the company. In some cases the media may be one of the response agencies with an important direct role as one of the emergency channels of communication to reach affected people or response providers to trigger plan actions.

STEP 9: ESTABLISH PROCEDURES FOR PERIODIC TESTING, REVIEW AND UPDATING OF THE PLAN

The Co-ordinating Group should ensure that the Plan is well tested. Initial testing should take place without involving the public, to uncover deficiencies in co-ordination among groups and in the training that has taken place so far.

Form a group to prepare a test drill scenario. The group should not include members of the emergency response group.

Prepare a written scenario that identifies the objectives of the drill, components of the plan to be tested, sequence of events and simulated hazard levels.

Designate a group of non-participating observers to evaluate the test drill using prepared evaluation checklists.

Using appropriate local officials, media and other outlets, alert the public and all participants that a test of the plan is scheduled. It is crucial that the public does not confuse the test with the real thing, which could result in panic and a real emergency.

Conduct the test using the prepared scenario.

Immediately after the test, the Co-ordinating Group should hold evaluation sessions to consider the results according to the evaluation sheets and the responders' experiences.

Interagency co-operation should be a particular focus of this evaluation. Assign appropriate participants to correct deficiencies and revise the plan accordingly.

Prepare a guideline to ensure that the plan is regularly reviewed and updated to keep it current.

STEP 10: COMMUNICATE THE INTEGRATED PLAN TO THE GENERAL COMMUNITY

Options for involving the community at large, rather than community leaders or representatives, should be pursued at every opportunity throughout the APELL process.

The ultimate critical step is to ensure that each member of the community who may be affected knows what the warnings will be and what do to during an emergency, how to get additional information, and when to evacuate if necessary.

Prepare a standard emergency response brochure for distribution to all residents in areas that may be affected. This must be appropriate to the level of literacy of the local population—use of symbols and pictures may simplify the response actions, although this may need to be backed up by a face-to-face community education programme. The brochure may need to be available in two or more languages for some communities.

Develop your plan

Distribute the brochure by the most appropriate means, such as post, door to door delivery or at community group meetings.
Prepare a standard media kit that will give emergency contact points in the company, and relevant government and other agencies, as well as providing background information and details on the operation and the emergency response plan.
Conduct a media briefing session to present the kit and explain what help is needed from the media during an emergency.
Build other elements of a public awareness campaign such as organising a pool of speakers available to address local civic groups, schools, etc.
Arrange for media coverage of drill and training activities.

F. OTHER SOURCES FOR INFORMATION AND REFERENCES FOR FURTHER READING

Chemical Sector in Thailand

- OECD Guidance on Safety Performance Indicators 2nd Edition (2008)
- UNEP APELL Handbook. Awareness and Preparedness for Emergencies at Local Level: a Process for Responding to Technological Accidents (1988)
- UNEP Management of Industrial Accident Prevention and Preparedness. Training Package (June, 1996)
- UNEP Technical Report N. 35. TransAPELL, Guidance for Dangerous Goods Transport Emergency Planning in a Local Community (2000)

Mining sector in Peru

- OECD Guidance on Safety Performance Indicators 2nd Edition (2008)
- UNEP Technical Report N. 41. APELL for Mining (2001)
- UNEP Technical Report N. 35. TransAPELL, Guidance for Dangerous Goods Transport Emergency Planning in a Local Community (2000)
- UNEP/ICMM Good practice in emergency preparedness and response (September, 2005)

Section 4   Implement the plan

This section will assist you in taking the actions you have identified for controlling chemical hazards / reducing the risks of your operations and putting them into practice. This section also covers promoting similar improvements along the value-chain.

A. WHAT?

Implement your chemical control action plans and training plans, inform your stakeholders about the risks of your products and operations, and promote the improvement of safety practices by your suppliers and business partners. Train your workers and business partners where appropriate.

B. WHY?

1. You have consulted and developed an understanding of your issues, and you know what actions need to be taken for reducing the risks of your products and operations. If you do not act appropriately, your reputation and potentially your competitive position will be affected.
2. You must implement your action plans, so that your safety performance can improve.
3. You must provide information about the risks of your products and operations to your stakeholders, so that they can avoid mishandling hazardous chemicals, and be better prepared in case of an emergency.
4. You must promote an improvement in the safety practices of your suppliers and your business partners. An accident involving chemicals being supplied to your operations or being handled by your business partners may affect your image and reputation among your clients, the community, and the authorities.

C. WHEN?

1. This will be done most effectively once you have undertaken a process of systematic planning. However, this can be done iteratively based on existing practice.
2. Do it continuously. The development, revision and implementation of plans and communication efforts, and an increase in the capacity of your business partners should happen on a regularly scheduled basis.
3. The development, revision, and implementation of plans and communication efforts, and an increase in the capacity of your business partners should also happen in response to incidents and changes in work patterns and practices.

Implement the plan

Once the issues are clearly understood and the goals, objectives and targets agreed it is necessary to ensure that you have the necessary practices in place to achieve them. The plans and procedures themselves are only part of this. An equally important if not more important part of this is ensuring that you have the information, communications and capacity in place to implement the plans and procedures. Once the plans and procedures are in place it is important to concentrate on good risk communications and good consumer product information. With good plans, procedures and information you can build the capacity you need – both internally with staff and externally with suppliers, contractors and key community partners.

You will find below a diagram with the rationale behind this approach and the sequence of tools provided, and also a table with the list of available tools in this section.

DEVELOP AND IMPLEMENT BEST PRACTICES

TRAINING AND RISK COMMUNICATION

BEST PRACTICES PROCEDURES

DEVELOPING TRAINING MATERIALS
RISK COMMUNICATION
PRODUCT RISK INFORMATION

PROCUREMENT

PROCUREMENT CHECKLIST

ACTIVITY	TOOLS
Develop and implement best practices	Tool 4.1 Best practice procedures
Training: train your workers and business partners	Tool 4.2 Training materials
Risk communication: foster risk communication	Tool 4.3 Risk Communication Tool 4.4 How to prepare product risk information
Procurement: Improve your procurement practices	Tool 4.5 Procurement checklists (ADVANCED TOOL)

E. BASIC TOOLS

Tool 4.1 Best Practice procedures

The objective of this tool is to help you develop work procedures to provide workers and general users of chemicals with clear instructions on best practices in chemical safety, thus complementing and clarifying the information on MSDS, and adapting it to the processes and equipment being used.

Some of the risk reduction actions you have identified in Section 3 will not be one-off actions but will require a systematic and continuous effort, and may also require some changes in the way you conduct your operations. Best practice procedures will help you with implementing risk reduction actions in a systematic way.

In the following page you will find examples of the type of information you may want to include – and thoroughly develop taking into account the specificities of your operations, equipment and chemicals being used - on your work procedures.

This tool is available for download in Word format on the Responsible Production CD
STEP 1: GATHER YOUR INFO ON EXISTING HAZARDS, CONTROL MEASURES, AND RISK REDUCTION ACTIONS
Go through the information you produced by applying the tools on Sections 1 and 3
STEP 2: DECIDE ON WHAT ACTIVITIES AND/OR PROCESS STEPS SPECIFIC BEST PRACTICE WORK PROCE-DURES SHOULD BE PROVIDED
Select the activities and/or process steps where you were able to identify the presence of chemical hazards
Decide which activities and/or process steps require the provision of specific information about the best practices to follow (take into account the types of chemicals and equipment being used, their hazards and potential risks, the skills and level of education of your workforce, information on past accidents, etc.)
Make sure to include the ones where you have identified the higher risks
Make sure to include the ones where specific equipment or instrumentation is being used
In your selection, you may want to include specific activities involving off-loading of hazardous chemicals, transfer operations, storage, and transport, and others you have identified by applying the advanced tools in Section 3
Make a list of the selected activities and/or processes

Implement the plan

STEP 3: DECIDE HOW MANY WORK PROCEDURES SHOULD BE PROVIDED FOR EACH ACTIVITY AND/OR PROCESS

Decide if it will be more useful to create more than one work procedure for each activity/process step you have selected

In this step, information contained on the MSDS will be of the most importance

Note that chemicals posing different types of hazards will necessarily require different work procedures

Note also that the hazards posed by some chemicals are so specific that you will necessarily need to provide separate work procedures for each

STEP 4: DEVELOP THE BEST PRACTICES / WORK PROCEDURES

Work procedures should provide concise information in a simple, direct and clear way

Format is very important. You may want to keep work procedures to a maximum length of two A4 pages. You may also want to include drawings or photographs, and include some powerful phrases to highlight or emphasize a specific point

Work procedures should explain in a simple but precise way the best practices to follow with the handling of each chemical or equipment, and should contain the necessary information to undertake operations in a safe way, under normal, start-up, shut-down, and abnormal (such as accident) conditions

At this point you may want to check available sources of information about best practices. For this you should take the following principles into account:
- Your main source is the information contained in the MSDS and in the instructions and manuals provided with the equipment being used
- It is always useful to check safety instructions with your chemical suppliers
- Best practice work procedure information on basic equipment operating instructions, personal protective equipment, first-aid and clean-up instructions, control measures, and general house-keeping should be included in each
- Finally, you may want to engage the services of outside experts for conducting a thorough risk assessment of your operations and providing recommendations for best practices

You should develop a first draft of the work procedures, and then discuss them with supervisors and relevant personnel

After agreeing on final content, you should meet with the workers involved and go through the work procedures with them

Beware of the need to change phrasing and adjust contents to make them clearer. You may want to replace some information by sketches and or photographs

Go back to discussions with your foremen and agree upon a final version of the work procedures

STEP 5: MAKE WORK PROCEDURES AVAILABLE AT THE PLACE OF USE
Work procedures should be made available at the place of use, accompanying the relevant MSDS. Carefully explain that work procedures do not replace the use of the MSDS
Work procedures should be placed in a way that they will be visible
Work procedures should be protected to prevent their deterioration
Explain the importance of work procedures and of following the best practices to workers (at this point, awareness raising and training should be provided)

Tool 4.2 Training Materials

The training materials cover all of the tools in this Guidance and Toolkit. They will allow you to provide the necessary training on responsible production to all staff and others who need to understand responsible production or who have a role to play. They will also allow you to develop tailored training materials on specific technical topics under Responsible Production such as chemical hazards at work, hazard identification, risk assessment, emergency planning, and others, including identifying and assessing further awareness raising and training needs.

Please refer to the training materials in the Responsible Production Training Package. You should select the elements that are more suitable to your organisation for the implementation of your Training Plan. The elements provided should therefore be adapted according to your organisation and to the training needs you have identified.

Tool 4.3 Risk Communication

The objective of this tool is to help you develop risk communication materials to assist your stakeholders with understanding the potentially dangerous properties of the chemicals you are marketing and handling at your operations, and their associated risks.

This tool is available for download in Word format on the Responsible Production CD

STEP 1: REVIEW THE CONCERNS AND NEEDS OF YOUR STAKEHOLDERS
Go through the information you produced by applying the tools in Sections 1 and 2
For this you will want to review your hazard maps, relevant stakeholder maps/lists and stakeholder profiles for selecting which stakeholder groups you should be targeting
At this point you may want to take into consideration two broad groups of stakeholders for which you may need to develop risk communication materials: internal stakeholders such as your workers and permanent or long-term contractors, and external stakeholders including suppliers, transporters, neighbouring facilities, adjacent communities, and end customers. The stakeholder profiles you have developed in Section 2 will help you better focus on which stakeholders should be considered when preparing risk communication materials.

STEP 2: DEVELOP YOUR RISK COMMUNICATION MESSAGES
For each of the relevant (internal and external) stakeholder groups you may have to develop specific risk communication messages, which will necessarily have to take into account their concerns and needs, particularly with regard to the risks that they may be exposed to as a direct or indirect effect of your operations and products. It may be best to communicate in partnership with some stakeholders and not just to them.
There are a number of general rules for all types of risk communication challenges that, if followed, will assist you in achieving the maximum impact for your messages, that is, that target groups will be fully aware of the relevant risks. You may want to take into account the following rules: • Simplify your message as much as you can without being inaccurate • Do not assume technical knowledge about the issue your are communicating • Anticipate the interests and needs of your target groups and design your risk communication messages to match their needs
When dealing with specific risk issues, you may wish to consider the following rules: • Place risk in the social context. Relate risk information to the real world of the audience. • Be cautious with using risk comparisons in the message. • Address in your information the qualitative characteristics that people associate with risk • Point out the importance of exposure and dose when communicating about risks

Implement the plan

Be sure to include all the relevant information in your messages. In particular, you may want to:
- Distinguish clearly between hazard (the type(s) of possible harms) and risk (the likelihood to suffer those harms).
- Specify what is known about exposures and whether sensitive populations (especially children) are likely to be exposed.
- Provide a justification for what is thought to be a tolerable or acceptable level of risk in this case
- Provide a clear and compelling justification for the type of action response that has been chosen or recommended to address a particular risk

STEP 3: MAKE YOUR RISK COMMUNICATION MESSAGES AVAILABLE TO YOUR STAKEHOLDERS

Finally, do not forget that the main objective of your risk communication efforts should be to assure adequate risk information to each of your stakeholders, along with the information on best practices and control measures for the safe handling of the chemicals you may be handling, producing or marketing through your operations.

You must make your risk communication messages available in the best format possible. You may want to take into account some of the communication methods already referred to in Tool 2.3, Section 2, and others that will help you foster risk information to your stakeholders. For this, you may want to consider:
- Bulletins, letters, brochures, and reports
- Product risk information, guidance on self-handling and disposal on the company website
- Speeches, participation in conferences and public presentations.
- Open houses and facility tours
- One-to-one meetings
- Public meetings and workshops
- Stakeholder advisory forums
- The contact information for a responsible person within the company who will be available to answer questions about the company's chemicals

STEP 4: CHECK TO SEE THAT THEY HAVE UNDERSTOOD.

Tool 4.4 How to prepare product risk information

The objective of consumer product information is to ensure that all of the information needed to ensure proper use and minimum risk is communicated. The principle is to be as complete and transparent as possible, while at the same time being clear and simple to understand.

It is also important to recognise that product information is often subject to standards or regulations that control the use of words, phrases and symbols. You should take into account the requirements you have identified and listed as per applying Tool 1.5 (Legal Register), and consult your suppliers and industry associations if needed. Standards, industry codes, laws and regulations must be met.

This tool is available for download in Word format on the Responsible Production CD
STEP 1: IDENTIFY WHAT INFORMATION IS NEEDED.
Product specification information, including hazardous material information and emergency response information
Product labels, brand names and logos
Instructions for transport, storage, use and disposal
Customer service contact information
STEP 2: ESTABLISH INFORMATION STANDARDS AND REGULATIONS.
Information requirements under national and international regulations and codes, if and when applicable. Examples of international regulations and codes that are relevant to chemical product risk information include the European Community Regulation on chemicals and their safe use, which deals with the Registration, Evaluation, Authorisation and Restriction of Chemical substances (REACH), and the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).
Fair trading practice standards and regulations
Standards and regulations for the use of words, phrases and symbols (e.g. product labelling standards, product certification requirements etc)
STEP 3: DEVELOP A PRODUCT INFORMATION PLAN.
Develop a product information plan. The plan should: • make the product easy to understand and use • meet all information standards requirements • meet all contractual requirements (brands, logos etc)

Implement the plan

The plan should possess:
- Information to be included on the packaging
- Information to be included on the product itself (if required)
- Information to be included with the product (e.g. instructions)
- Information that can be used for sales and marketing purposes
- Information that can be used for public relations purposes
- Information that can be used by customer services.

F. OTHER SOURCES FOR INFORMATION AND REFERENCES FOR FURTHER READING

Chemical Sector in Thailand
- ICCA Product Stewardship Guidelines
- ICCA Global Product Strategy
- OECD Guidance Document on Risk Communication for Chemical Risk Management (2002)

Mining sector in Peru
- ICCA Product Stewardship Guidelines
- ICCA Global Product Strategy
- OECD Guidance Document on Risk Communication for Chemical Risk Management (2002)

Section 5 Evaluate how well you did and tell people about it

Section 5 is relevant to improvement and transparency. The world does not stand still. Every successful organisation is constantly looking for ways to do better. The best way to achieve this is to check and see how well you have done, to compare your performance with benchmarks for best practice, and then to make changes that will improve your performance. Best practice in this area also includes being transparent about what you have achieved and what you are planning for the future. In fact, this transparency links back to Section 2. Involving others is not a one way street. If you have involved stakeholders in helping to identify issues and plan for improved chemical safety along the value-chain and in the community, they will be expecting you to let them know how you fared. If you do not let them know how you did they will be less inclined to engage with you in the future. If they do not engage, you are not likely to have the information and understanding you will require for fully identifying the risks posed by your chemicals and operations, and to succeed as an organisation.

A. WHAT?

Understand and be transparent about how you have performed in reducing the risks posed by your chemicals and operations along the value chain and in the community.

B. WHY?

1. You must understand how you are performing and if your efforts are getting you closer to the objectives and targets you have set
2. You must measure the results of your actions towards improved chemical safety
3. You must respond to the stakeholders you have engaged
4. You must build stakeholders' trust in your capacity for assuring that your chemicals and operations are handled in a safe way.
5. You must be accountable for both your shortcomings and successes

C. WHEN?

1. Do it annually.
2. You do not need to wait until you feel you have a good story to tell or until you possess fully implemented systems. Once you have begun to engage stakeholders, they will want to know where you are on the journey for improved chemical safety and what you have achieved. They will want an honest statement of the current state of your chemical safety practices. If you wait too long you will lose their trust and their willingness to engage.
3. Communication will support mutually helpful relationships. It is not a single activity or event.
4. Be aware of the expectations, capacity and access of your audiences and tailor you communications accordingly.

Evaluate how well you did and tell people about it

Evaluating performance - and communicating it - is perhaps the most important thing you will do to gain and maintain public trust and engagement. At the end of the day, you want to be able to tell people what you have achieved in a way that is credible, that addresses their concerns, and that meets their expectations.

The first step is to make sure that you have good quality information that you can stand behind. You have already undertaken a lot of work to identify your issues of main concern, develop goals, objectives, targets, plans and procedures for improved chemical safety, and implement them. You must now tell your story.

To generate quality data for reporting, you must conduct both performance and assessments. The two evaluation protocols in this section build upon the work that you have already done and provide you with the means to conduct periodic evaluations. This information will provide the backbone for your communications. It will also provide the pathway to continual improvement, the updating of objectives and targets, and the revision of plans and procedures towards improved chemical safety management.

In addition to the tools in this section, the dashboard in the Framework Booklet provides a simple self-assessment tool to evaluate both implementation and performance. The self-assessment tool is based upon a series of indicators linked to the Responsible Production framework.

The field of communications is becoming increasingly more complex. You need to know who you are talking to, what they want to know and how they like to receive their information. The external communications tool takes you through the decision-making process for developing a sound communications approach.

Finally, it is one thing to communicate, it is quite another to get people to believe you. More and more organisations are using independent assurance to validate what they are saying. The independent assurance tool (an advanced tool) provides a way in which you can decide whether assurance is needed and how to go about getting it if necessary.

You will find below a diagram with the rationale behind this approach and the sequence of tools provided, and also a table with the list of available tools in this section.

EVALUATE PERFORMANCE AND
MANAGEMENT PRACTICES

COMMUNICATE PERFORMANCE

PROVIDE ASSURANCE

PERFORMANCE
ASSESSMENT
PROTOCOL

MANAGEMENT
ASSESSMENT
PROTOCOL

EXTERNAL COMMUNICATIONS

INDEPENDENT ASSURANCE

ACTIVITY	TOOLS
Evaluate performance and management practices	Tool 5.1 Performance Assessment protocol Tool 5.2 Management Assessment protocol
Communicate performance	Tool 5.3 External Communications
Provide assurance	Tool 5.4 Independent assurance (ADVANCED TOOL)

Evaluate how well you did and tell people about it

Tool 5.1 Performance assessment protocol

The objective is to conduct periodic assessments of performance to provide an overall picture of performance and to support continual improvement. At a minimum, this should be done semi-annually. Monthly or quarterly assessments are useful when plans and procedures are new, or directly following an incident. Periodic performance assessments should be conducted in addition to continuous monitoring, which should be part of the implementation of your chemical control action plans.

This tool is available for download in Word format on the Responsible Production CD			
STEP 1: PREPARE A PERFORMANCE ASSESSMENT CHART AS FOLLOWS			
Assessor's name			
Date of assessment			
List all of your targets	Date to achieve target	Actual performance	Follow up actions required
Reviewed by			
Approved by			
STEP 2: ASSIGN RESPONSIBILITIES FOR THE ASSESSMENT, THE REVIEW AND THE APPROVAL.			
STEP 3: DETERMINE THE FREQUENCY OF THE ASSESSMENTS (MONTHLY, QUARTERLY, SEMI ANNUALLY).			
STEP 4: CONDUCT THE ASSESSMENT			

Tool 5.2 Management assessment protocol

The objective is to conduct periodic assessments regarding whether you are meeting your objectives to support continual improvement. At a minimum this should be done semi-annually. Monthly or quarterly assessments are useful when plans and procedures are new, or directly following an incident. This activity should be integrated with organisational management assessments.

This tool is available for download in Word format on the Responsible Production CD			
STEP 1: PREPARE A MANAGEMENT ASSESSMENT CHART AS FOLLOWS.			
Assessor's name			
Date of assessment			
List all of your objectives	Have you met the objective?	Areas where improvement is needed	Follow up actions required
Reviewed by			
Approved by			
STEP 2: ASSIGN RESPONSIBILITIES FOR THE ASSESSMENT, THE REVIEW AND THE APPROVAL.			
STEP 3: DETERMINE THE FREQUENCY OF THE ASSESSMENTS (MONTHLY, QUARTERLY, SEMI ANNUALLY).			
STEP 4: CONDUCT THE ASSESSMENT			

Now that you have evaluated how well you have done, it is important to communicate this to the people you have engaged. Reporting on performance is an essential part of responding to engagement and staying engaged.

Tool 5.3 External communications

This section is concerned with the way in which you respond to your stake-holders. The objective of external communications is to be transparent about your commitments (goals, objectives, targets) and your performance. External communications build the trust you need to operate and be successful. Good communications can forestall challenges and campaigns before they happen.

This tool is available for download in Word format on the Responsible Production CD

STEP 1: DECIDE WHAT AUDIENCES YOU NEED TO COMMUNICATE WITH. THIS WILL REFLECT YOUR PRIORITY STAKEHOLDERS. REVIEW THE LIST OF RELEVANT AND IMPORTANT STAKEHOLDERS.

STEP 2: DECIDE THE BEST WAY TO COMMUNICATE. CONSIDER THE FOLLOWING ISSUES:
What level and type of information do the different audiences want? • Information on goals, objectives and targets and general assertions of performance • Detailed technical data
What forms of communications do they have access to? • The internet • Public media (newspapers, TV and radio) • Printed publications • Public presentations
What forms of communication will they see as credible? • Marketing materials • Brochures and flyers • Public announcements, press releases • Assured reports
Can you use the same communication for all audiences (e.g. an annual report on chemical hazard performance, included as part of other annual reporting). Or do you need different communications for different audiences. • Today most organisations have a communications plan that addresses the needs, level and access of different audiences in different ways – but this is typically supported by an authoritative independently assured report. • The full annual report is typically published on a web site. • A summary report is printed. • Additional flyers, presentations and information in the public media are tailored for different audiences but are based upon the information and data in the main report.

STEP 3 THE MAIN REPORT SHOULD COVER THE FOLLOWING
• A statement of commitment from the CEO or equivalent
• A review of the nature of the business
• An explanation of how you determined what issues you needed to manage and an explanation of the issues

- An explanation of how you involved stakeholders

- A description of your goals, objectives and targets

- Information on how you performed against your goals, objectives and targets

- A statement on your future plans for improvement

- A statement of future goals, objectives and targets

- A statement on any standards or guidelines you used for reporting

- An independent assurance statement

STEP 4 PREPARE ANY ADDITIONAL MATERIALS NEEDED TO MEET THE NEEDS OF IMPORTANT STAKE-HOLDERS THAT WILL NOT BE MET BY AN ANNUAL REPORT.

F. OTHER SOURCES FOR INFORMATION AND REFERENCES FOR FURTHER READING

Chemical Sector in Thailand

- AA1000 Assurance Standard (2003)
- The Future State of Assurance, AccountAbility and ACCA(2005)
- Global Reporting Initiative GRI G3 (2006)
- OHSAS 18001
- ILO-OSH 2001

Mining sector in Peru

- AA1000 Assurance Standard (2003)
- The Future State of Assurance, AccountAbility and ACCA(2005)
- Global Reporting Initiative GRI G3 (2006)
- OHSAS 18001
- ILO-OSH 2001

Appendix   Additional Advanced Tools

Tool 1.3 Additional Guidance on risk assessment

Risk assessment, in this context, is a tool used in risk management to help understand risks and inform the selection and prioritisation of prevention and control strategies. With risk assessment, risks can be ranked on a relative scale and technical and organisational options can be evaluated, so that results can be maximised in terms of increased safety. This helps in the choice of options.

Risk assessment is a process that consists of a number of sequential steps, i.e.: hazard identification; event scenario assessment; consequence assessment; likelihood assessment and risk integration and comparison.

When undertaking a risk assessment, it is important to carefully consider the various possible approaches and methods available, and choose an approach/method that is appropriate for each particular circumstance, since all approaches/methods have strengths and weaknesses, and none is perfect.

The choice of a particular approach/method should be governed by a number of factors, including:
* the objective/purpose of the risk assessment
* national legal requirements and recommended methodologies on risk assessment
* the estimated nature of the risk
* the availability and adequacy of data
* the expertise and resources needed for a particular approach/method, and their availability
* the history of incidents at the installation and other related installations
* unavoidable constraints on the process
* the socio context in which the assessment will be carried out
* the assumptions on which the approach/method is based

Risk assessments should be accompanied by information concerning the assumptions, data limitations and uncertainties embedded within risk assessment approaches/methods, as well as within decision-making processes, so that the results of risk assessments can be appropriately utilised.

It is important to address possible data limitations and inappropriate selection of data in order for the results of the assessments to be reliable and comprehensive. For example, there may be gaps and inadequacies in the data available on equipment failure rates, modes of equipment failure, human error predictions, long-term or delayed health effects of acute exposures, and the effects of chemicals on the environment.

Data limitations can be managed in part through the use of less detailed, more generic approaches/methods, or the use of comparative assessments to aid

choosing between alternative options. The use of comparative assessments normally involves similar assumptions, limitations and uncertainties and therefore their effect on the assessment results is often diluted.

Risk assessment should be a continuous and evolving process. Assessments should be reviewed and reassessed periodically as well as when there are indications that a revision may be needed. A risk assessment may need to be revisited when, for example:

- there are new or changed processes at hazardous installations, or significant changes in transport of hazardous substances
- incidents occur
- new technology offers scope for improvements
- the experience of labour and/or management is at odds with the risk assessment
- new information about the behaviour or effects of substances and processes becomes available
- there are proposals for new construction or other developments inside the premises of the installation or nearby

RISK ASSESSMENT METHODS

The following discusses some of the risk assessment methods which are generally used in the chemical process industry. Over time, variations of these methods have evolved to fulfil the requirements of specific operators or groups of users.

The methods applied must show a systematic and plausible approach. Generally one method alone is not used for all the steps from hazard identification, through identifying the initiating event criteria, to the determination of the effects and consequences. The various methods have different underlying principles by which they function and therefore have different uses.

1. Hazard Mapping

One of the simplest methods of hazard assessment is hazard mapping, in which a plan of the facility (or community) is used as a basis for documenting the amount and type of hazardous chemical involved in relation to its location. In doing so, an overview of the distribution, and respectively the concentration of the hazardous substances, can be obtained and an initial assessment made.

In this method no consideration is made of the technologies and processes related to the hazardous substances, or the frequency of occurrence of any release scenarios. Therefore this method is unable to provide any detailed indication of the risks brought about by the use hazardous substances.

2. Checklists

Checklists are used to check the completeness of particular operations e.g. deliveries, compliance with particular regulations, measures to be carried out (for example regular maintenance, application of management of change processes and so forth). When using checklists it is important to be aware of their limits. Checklists can only test what is already known. Consequences of changes or dynamic situations cannot be recognised or assessed. Usually the questions in a checklist are answered with a yes/no answer which also limits the depth to which any investigation may reach.
Checklists must first of all be developed: they should be as specific as possible for the task concerned otherwise the necessary depth of enquiry is lost. One major weakness of checklists is that they can lead to a blinkered view of the situation and aspects beyond the questions posed may not be considered.

3. Hazard and Operability Study – HAZOP

The HAZOP process is a systematic approach for the discovery of deviations and hazards in systems of all types. It is a method that has become well established within the chemical processing industry.
The HAZOP study is carried out in a team made up of the various departments concerned with the project or installation to be assessed (e.g. planning, operating, maintenance, safety). The system to be examined is divided into functional sections which are easily handled. Following this the intended function (operation) for the first section is described.

For example, pump a total of 20 m^3 of substance A at 20 °C with a flow rate of 3m^3/h and a maximum pressure of 3 bar from the storage tank into the reactor.

The core element of the HAZOP study is then the successive application of "Guidance words" to the intended operation in order to develop hypothetical deviations. The "Guidance words" are:
- no (not, none)
- more
- less
- partially
- as well as
- reverse
- other than

Aspects of the operation which may be considered can be for example: temperature, pressure, level, chemical identity, flow rate, volume, density, material, etc.

Following the development of the hypothetical deviations, those that are realistic events are investigated as to their causes and the consequences of their occurrence. This process is repeated for all of the functional sections to be examined. Measures for removing the hazards or reducing their impact are then determined.

The particular advantages of using HAZOP Studies lie in the systematic approach and the diversity of failures and deviations within the chemical processes that can be covered. The major disadvantage is the time and documentation requirements. In particular training and experience for the HAZOP team leader are important to ensure that the study does not get lost in fine detail or at the other extreme remain at a superficial level that does not consider the hazards sufficiently. The HAZOP Study alone does not improve the safety of an installation. From experience, one of the most difficult aspects appears to be an adequate description of the intended operation, including all of the relevant parameters. If safety critical or safety relevant parameters are not included in the study then it is not possible to analyse the consequences of their deviation from the intended operation.

The HAZOP Study does not consider the expected frequencies of occurrence of the deviations. To assess the risks fully, additional methods are needed.

4. What If?

- The "What If?" analysis is a scenario based approach to hazard identification and consequence assessment. For example:
- What if the level rises above x?
- What if the temperature is greater than t °C?
- What if the <parameter> is <comparison><intended state>?

The "What If?" analysis is similar in some ways to the HAZOP Study, however is highly dependent on the knowledge and experience of those who develop the scenarios to be considered by the question. Answers can only be generated for the questions which are posed. There is no internal control within the method which identifies the completeness of the study.

The system is suitable for simple, well understood systems or as a "brain storming" technique. However the system is weak in generating new knowledge out of existing information.

5. Risk Matrix

By using a "Risk Matrix" it is possible to compare various hazards in relation to their consequences and their expected frequency. The analysis is carried out in a team. The most important step is the identification of the hazards. This can be carried out for example with a systematic method such as a HAZOP Study.

The consequences are classified in categories, for example:
1. catastrophic
2. critical
3. slight
4. negligible

Similarly the frequencies can be classified in relative classes, either based on numerical probabilistic data or experience for example:

A. frequently
B. regularly
C. occasionally
D. rarely
E. unlikely
F. practically impossible

Within the risk matrix the hazards are placed according to their frequencies and consequences. By setting a target risk level as a diagonal within the matrix, it is possible to determine which hazards must either be eliminated completely or their consequences or frequencies reduced. The risk matrix cannot identify hazards, only evaluate their potential impact. Risk identification requires the use of other methods such as HAZOP.

Advantages: This approach is not dependent on frequency numbers for the assessment of risks. However it does require a certain degree of skill and experience to ensure a consistent assessment of risks. The classification of the hazards should be carried out in a team to ensure the best use of the available experience. This method also allows the team to see where it is most important and most effective to apply risk reduction measures to reduce the overall risk from the facility.

Example of a Risk Matrix
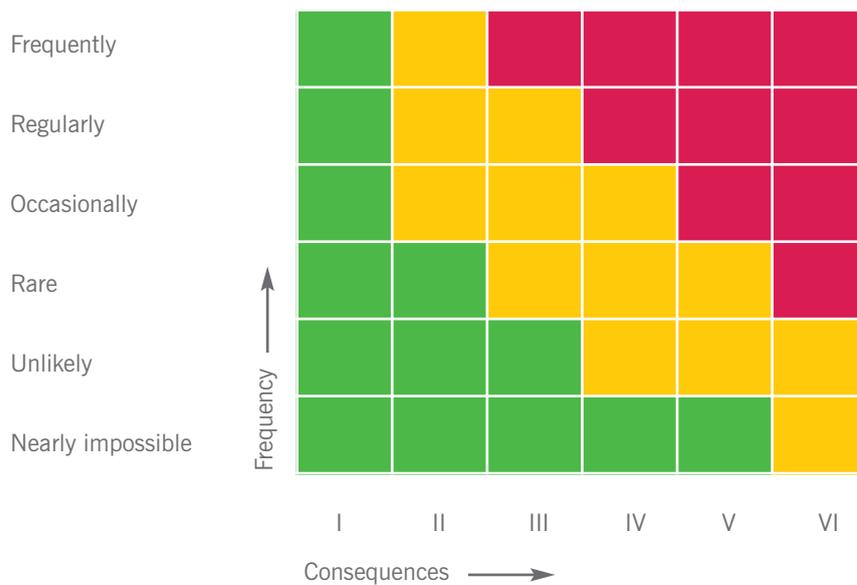
Consequences:
I negligible, II minimal, III medium, IV large, V very large, VI catastrophic

Risk levels

Acceptable	Acceptable, however risks should be reduced as far as possible	Unacceptable

Concluding remarks: all risk assessments are "snap-shot" views of the situation at the time the study was carried out. Risk assessments should be repeated regularly and should take into account: improved knowledge, changes in technology, changes in the operating structure or changes in the surrounding neighbourhood. Risk assessments should be used to support the decision making process. They are usually not the only grounds on which a decision is based.

Tool 1.6 Hazard Classification and Control Banding

This is an advanced tool. You may wish to consider if using this tool will bring an added value, taking into account the hazard information you have available, number of different hazardous chemicals being handled at your operations and the resources you have available for this.

The objective of this tool is to classify identified hazards according to a control band, aimed at defining the most adequate control measure, taking into account products EU R-Phrases, GHS classification, quantities involved, and volatility/dustiness.

This tool is available for download in Word format on the Responsible Production CD
STEP 1: FIND THE HAZARD CLASSIFICATION AND MATCH IT TO A HAZARD GROUP

Match each chemical you have identified in your Inventory to a hazard group in the table below. The table groups the potential for harm of different chemicals in five hazard groups based on increasing hazard (Groups A to E) according to ILO's approach on chemical control banding:

Hazard Group	EU R-Phrases	GHS hazard classification (class/level)
A	R36, R38, R65, R66 All dusts and vapours not allocated to another band	Acute toxicity (lethality), any route, class 5 Skin irritancy class 2 or 3 Eye irritancy class 2 All dusts and vapours not allocated to another band
B	R20/21/22, R40/20/21/22, R33, R67	Acute toxicity (lethality), any route, class 4 Acute toxicity (systemic), any route, class 2
C	R23/24/25, R34, R35, R37, R39/23/24/25, R41, R43, R48/20/21/22	Acute toxicity (lethality), any route, class 3 Acute toxicity (systemic), any route, class 1 Corrosivity, subclass 1A, 1B or 1C Eye irritancy class 1 Respiratory system irritancy (GHS criteria to be agreed) Skin sensitization Repeated exposure toxicity, any route, class 2
D	R48/23/24/25, R26/27/28, R39/26/27/28, R40 Carc. Cat. 3, R60, R61, R62, R63, R64	Acute toxicity (lethality), any route, class 1 or 2 Carcinogenicity class 2 Repeated exposure toxicity, any route, class 1 Reproductive toxicity class 1 or 2
E	R42, R45, R46, R49, R68	Mutagenicity class 1 or 2 Carcinogenicity class 1 Respiratory sensitization

STEP 2: FIND OUT HOW MUCH OF THE SUBSTANCE YOU ARE USING OR GOING TO USE

How much of a chemical you use or are going to use will determine how the chemical is handled, and affects how much of it you are exposed to. For each chemical substance you use or are going to use, describe the amount in each batch (or daily for continuous operations) as small, medium or large, according to the table on the next page.

Quantity	Solid		Liquid	
	Weight	Typically received in	Volume	Typically received in
Small	Grams	Packets or bottles	Millilitres	Bottles
Medium	Kilograms	Kegs or drums	Litres	Drums
Large	Tonnes	Bulk	Cubic metres	Bulk

STEP 3: FIND OUT HOW MUCH OF THE SUBSTANCE IS GOING TO GET INTO THE AIR

The physical form of a chemical affects how likely it is to get into the air. In this step we use dustiness for solids and volatility for liquids to define this aspect. The dustier or more volatile the substance, the more it is likely to become airborne. It may be possible to reduce the amount of a chemical getting into the air by buying and using the chemical in a different form.

DETERMINING THE DUSTINESS OF SUBSTANCES

SOLIDS	The dustiness of a solid is determined as follows:
LOW	Pellet-like solids that don't break up. Little dust is seen during use (e.g. PVC pellets, waxed flackes).
MEDIUM	Crystalline, granular solids. When used, dust is seen but settles down quickly. Dust is left on surfaces after use (e.g. detergents)
HIGH	Fine, light powders. When used, dust clouds can be seen to form and remain in the air for several minutes (e.g. cement, carbon black, chalk dust)

DETERMINING THE LEVEL OF VOLATILITY OF SUBSTANCES	
LIQUIDS	Volatility refers to the ability of a liquid to turn into a vapour and therefore get into the air. To determine the volatility of a liquid, you need to find its boiling point (i.e. look on the MSDS available from the chemical supplier). Compare the boiling point against the descriptions below in order to determine the level of volatility:
LOW	Boiling point above 150°C
MEDIUM	Boiling point between 150°C and 50°C
HIGH	Boiling point below 50°C

Note 1: for processes being carried out above room temperature (approximately 20° C), this will typically increase the volatility (i.e. increase the risk of the liquid to turn into a vapour

Note 2: if you are using a preparation made up of two or more substances with different boiling points, use the lowest boiling point to determine the level of volatility

STEP 4: FIND THE CONTROL APPROACH

Identify the approach needed to prevent or control exposure to significant hazards that may arise during the storage, use, handling, and disposal of a particular chemical substance.

For this, use the following table to identify the necessary control approach by matching the hazard group with the amount of the substance used (in a batch or daily) and its level of dustiness (for a solid) or volatility (for a liquid).

The four different control approaches are indicated by the numbers 1 to 4 in the box

Amount used	Low dustiness or volatility	Medium volatility	Medium dustiness	High dustiness or volatility
Hazard group A				
Small	1	1	1	1
Medium	1	1	1	2
Large	1	1	2	2
Hazard group B				
Small	1	1	1	1
Medium	1	2	2	2
Large	1	2	3	3

Hazard group C			
Small	1	2	1	2
Medium	2	3	3	3
Large	2	4	4	4
Hazard group D			
Small	2	3	2	3
Medium	3	4	4	4
Large	3	4	4	4
Hazard group E			
For all hazard group E, substances, choose control approach 4			

STEP 5: APPLY THE RECOMMENDED CONTROL APPROACH

Control approach 1: a good standard of general ventilation and good working practices are required.

Control approach 2: engineering control e.g. local exhaust ventilation ranging from a single point extract close to the source of hazard to a ventilated partial enclosure is required.

Control approach 3: the hazard should be contained / enclosed.

Control approach 4: expert advice is needed to choose necessary control measures

Note: The measures recommended in control approach 3 include the measures described for control approach 1 and 2.

Note: The 4 control approaches give recommendations for:
☐ Access
☐ Design & Equipment
☐ Maintenance
☐ Examination & Testing
☐ Cleaning
☐ Personal Protective Equipment (PPE)
☐ Training and Supervision

Note: Each approach has an increasing level of control. For each of these aspects you can find more details on these control approaches by visiting the ILO internet site for the International Chemical Control Toolkit.

http://www.ilo.org/public/english/protection/safework/ctrl_banding/toolkit/icct/index.htm

Tool 2.5 Prioritise the issues

This is an advanced tool. You may wish to consider using this and the following tool in this section (Tool 2.6) to bring added value by developing a more systematic analysis of the results of engagement with stakeholders.

The overall objective of getting the right people involved is to better understand and then respond to the issues and concerns of stakeholders. Understanding this will contribute to your success. The purpose of this tool is to ensure that you are getting the information you need from each engagement and are able to prioritise this information accordingly. This tool should be used to support the methods that seek stakeholder input.

This tool is available for download in Word format on the Responsible Production CD	
STEP 1: LIST ALL OF THE ISSUES AND CONCERNS RAISED THAT REQUIRE A RESPONSE, ACTION OR DECISION	
STEP 2: RANK THE IMPORTANCE OF EACH ISSUE ACCORDING TO STAKEHOLDERS (ON A SCALE OF 1 – 10)	
STEP 3: LIST THE REASONS FOR THIS IMPORTANCE	
STEP 4: INDICATE WHICH ISSUES HAVE STRATEGIC (WHAT WE DO) AND / OR OPERATIONAL (HOW WE DO IT) IMPLICATIONS	
STEP 5: ESTABLISH WHAT YOU WILL DO WITH THIS INFORMATION	

Tool 2.6 Review the engagement process

This is an advanced tool. As with the previous tool (Tool 2.5), you may wish to consider if using this tool will bring an added value, taking into account the size of your operations, the number and type of stakeholders you are engaging with, and the resources you have available for this.

The objective of this tool is to evaluate the success of your engagement with stakeholders. This information will be invaluable in planning improved engagements in the future.

This tool is available for download in Word format on the Responsible Production CD			
STEP 1: EVALUATE THE TARGETS			
Did you set any engagement targets (e.g. on attendance, stakeholder satisfaction?)		Did you meet the targets?	
STEP 2: EVALUATE THE GOALS			
What did you want to achieve?		Did you achieve it?	
Overall how well did it go?	Worst case scenario — Best case scenario		
STEP 3: EVALUATE HOW WELL THE PLAN WORKED			
What went according to plan?			
What didn't go according to plan?			
What would you do differently next time?			
Did the engagement make an impact on stakeholders' views and/or behaviour?			
Did the engagement make an impact on the company's views and/or actions?			

Tool 3.7 Prevent and reduce risk at Site - General

The objective is to identify ways to prevent and reduce risks from general hazards on site.

This tool is available for download in Word format on the Responsible Production CD
STEP 1: REVIEW THE HAZARDS YOU HAVE IDENTIFIED
Go back to the list of hazards and hazard hotspots you have identified.
STEP 2: IDENTIFY POSSIBLE CAUSES
Go through your list and, taking into account stakeholder concerns, pose yourself the following questions:
• Can you identify the causes for losses of chemicals during delivery and in your storage area?
• Do you observe any practices or activities that lead to losses during handling and weighing operations?
• Do you ensure that only the needed quantity of chemicals is premixed?
• Do you make sure that the appropriate quantity and mixtures of chemicals are used in the production process?
• Do you know the expiry dates of all chemicals kept at hand?
• Do you use materials first which you bought first (fifo: first in – first out)?
• Can you find out the hazardous properties of the used substances?
• Are your workers informed about the hazardous properties of the substances?
• Are MSDS, first aid procedures or other informational materials on chemical safety in the language of the workforce available in areas where chemicals are used?
• Is personal protective equipment used and kept in good working order?
• Is ventilation appropriate?
• Is lighting sufficient?
• Are there designated walkways away from truck traffic?
• Are emergency exits marked on buildings?
• Are caution signs installed?
• Is there easy access for the fire brigade in the case of an emergency?
Mark identified causes on your list

STEP 3: IDENTIFY PREVENTIVE MEASURES

Discuss with workers, supervisors and external stakeholders (where appropriate) possible preventive actions, particularly the ones associated with good housekeeping

STEP 4: CHECK OPPORTUNITIES FOR IMMEDIATE RISK REDUCTION ACTIONS

Conduct a walkthrough in the site and, taking into consideration stakeholder concerns, write down your observations on a work sheet, noting all situations where you see incidents, and possible immediate actions to implement. Pay particular attention to:

- the waste, loss, contamination, or expiry of a chemical substance

- potential hazards created in the way that chemicals are stored, mixed, transported, and used

- untidy places and places with accumulated in hidden corners

- places where you see chemical substances spilled on the floor

- places where you see dust clouds created during transferring or weighing operations

- places where you see dust accumulated on machines, piping, ventilation equipment etc.

- lids that are not tightly sealed so that the contents are exposed to air, humidity, etc

- containers that are partially or completely uncovered where fumes may escape

- chemical containers such as bags, drums, bottles, tins or others that are dented, damaged or defective

- chemical packaging that is deteriorating due to leakage, damage, floor water, humidity, etc

- containers that have no hazard labels, that have hazard labels but these are unreadable or damaged, or that have product labels on top of hazard labels

- chemical containers that are being used for other purposes, e.g., storing water, storing and transferring other materials

- situations where workers have created and are using makeshift personal protection devices (e.g. a towel wrapped around face)

- situations where workers are not using the appropriate Personal Protection Equipment (PPE)

- situations where not everyone is wearing the appropriate PPE (note: the appropriate PPE should be used by everyone, including management, authorities and guests)

- situations where PPE being used is very uncomfortable and/or significantly restricting the worker (note 1: PPE should be chosen so as to be as comfortable as possible and not restrict the work being done; note 2: technical control measures should be investigated to reduce the need to wear PPE)

- places in the factory where workers complain about health effects, loss of consciousness, etc

- incidents of fire, explosion, or accident in the past year

- leaking roofs

- ignition sources such as heat / sparks / open flames / electrostatic discharge in the neighbourhood of flammable liquids / gases / dusts

- containers that are labelled with hazard symbols

- situations where the skin of workers is contaminated with chemicals

- spoiled or expired chemicals

- enforcing the elimination of smoking, eating or drinking at the work place

- the provision of suitable washing and changing facilities

- situations where workers do not have appropriate tools (or are using improvised tools) for mixing, weighing, transportation, etc

STEP 5: DISCUSS POSSIBLE ACTIONS WITH WORKERS AND SUPERVISORS

Confirm with workers and supervisors the feasibility of immediate actions, particularly the ones associated with improving housekeeping, with the provision of adequate hazard and risk information, and with the use of appropriate PPE.

Tool 3.8 Prevent and reduce risk at site – Specific: Off-Loading and Transfer of Chemicals

The objective is to identify ways to prevent and reduce risks from specific hazards related to operations involving off-loading and transfer of chemicals at site

This tool is available for download in Word format on the Responsible Production CD

STEP 1: REVIEW THE HAZARDS YOU HAVE IDENTIFIED

Go back to the list of hazards and hazard hotspots you have identified.

Select the hotspots where operations involving off-loading or transfer of chemicals take place (including pipeline and manual transfer of chemicals)Go back to the list of hazards and hazard hotspots you have identified.
Select the hotspots where operations involving off-loading or transfer of chemicals take place (including pipeline and manual transfer of chemicals) Note that not all of the requirements below will be applicable to the chemicals being off-loaded or transferred in your facility. These are indicative only, and should be reviewed taking into account the characteristics of your facility and of the chemicals being handled (as per the respective MSDS)

STEP 2: IDENTIFY POSSIBLE CAUSES

Go through your list of hotspots and, taking into account stakeholder concerns, pose yourself the following questions:

☐ Is off-loading only conducted by a dedicated and competent person?

☐ Is there adequate illumination of the delivery vehicle off-loading hose connection point?

☐ Can the off-loading area sufficiently drain and contain any spillage or surface runoff water? (e.g. through bunds and dykes)

☐ Are bunds and dykes enough to cope with leaks during transfers?

☐ Are bunds and dykes being properly maintained?

☐ Is the off-loading area equipped with absorbent material (and/or stabilizing reagent) and shovels?

- Are the following symbols displayed at off-loading areas?:
  ☐ No entry to unauthorised persons
  ☐ No smoking
  ☐ No naked flames
  ☐ Protective clothing to be worn
  ☐ Warning of hazardous substance(s)
  ☐ First aid procedure
  ☐ Other symbols as required by law/regulations/codes of practice

- Do you ensure that off-loading does not commence until the following inspections and actions have been carried out by a competent qualified worker?
  - ☐ Verification of product delivery documents and delivery vehicle details
  - ☐ Delivery vehicle driver and the qualified worker wear approved personal protective equipment
  - ☐ An approved and totally functional first aid kit, antidote kit (if applicable) and emergency rescue equipment with appropriate personal protective equipment are available and in working order at the off-loading area
  - ☐ Off-loading should always be controlled at the transfer point. Communication with the control room should also be made available.
  - ☐ The safety shower and eye wash (including audible alarms) are tested and in working order
  - ☐ Fire extinguishers are available
  - ☐ Delivery vehicle is standing level, the park brake has been applied and the wheels chocked and earth straps connected
  - ☐ Storage tank levels have been determined and verified
  - ☐ Appropriate delivery line flange is unlocked
  - ☐ Off-loading hose connection bolts have been tightened and tested
  - ☐ Off-loading area has been secured from entry by unauthorized personnel
  - ☐ Off-loading only commences when the supplier vehicle driver and qualified worker are both outside exposure area
  - ☐ Qualified worker visually checks the off-loading hose couplings for leaks, from outside exposure area when off-loading commences
  - ☐ Qualified worker and the vehicle supplier driver both remain in attendance at the off-loading installation to monitor the off-loading process
  - ☐ Off-loading valve is immediately closed if any leaks or other abnormal conditions develop
  - ☐ On completion of off-loading the supplier driver and qualified worker ensure that equipment used and contaminated during off-loading are flushed and any spillage properly handled in accordance with the requirements in the MSDS

- ☐ Do you ensure that all pipelines used for transferring chemicals
  - ☐ Are clearly identified?
  - ☐ Have an arrow indicating the direction of flow?
  - ☐ (On lagged pipelines) Have labels and arrows are placed at regular intervals?

- ☐ Do you ensure that all pipelines, pumps and valves used for transferring chemicals are inspected routinely and that procedures are established to deal with evidence of deterioration or leaks?

- Do you ensure that when transferring flake or briquette reagents that are likely to volatize at room temperature or by contact with water/moisture:
  - ☐ the area is well ventilated?
  - ☐ an audible alarm is installed at the discharge point?

- Do you ensure that when manual transfer of chemicals takes place:
  - ☐ It is only performed by a trained, competent worker wearing the appropriate PPE?
  - ☐ Containers or drums used for transfer remain fully closed until reaching the point of entry into process streams?
  - ☐ Discharge points of chemicals into process streams enter at a point which will create the lowest possible risk of exposure to personnel?

Mark identified causes on your list

STEP 3: IDENTIFY PREVENTIVE MEASURES

Discuss with workers, supervisors and external stakeholders (where appropriate) possible preventive actions, particularly the ones related to good practices in chemical handling (you may want to check the safety information in the relevant MSDS)

STEP 4: CHECK OPPORTUNITIES FOR IMMEDIATE RISK REDUCTION ACTIONS

Conduct a visual inspection of an off-loading operation at site and, taking into consideration stakeholder concerns, write down your observations on a work sheet, noting all situations where you see, and possible immediate actions to implement.

Pay particular attention to:

- chemical substances spilled on the floor

- dust clouds created during off-loading or transferring operations

- lids that are not tightly sealed where the contents are exposed to air, humidity, etc during off-loading or transferring operations

- containers that are partially or completely uncovered where fumes may escape

- damaged or defective chemical containers

- deteriorated chemical packaging due to leakage, damage, floor water, humidity, etc

- unlabelled containers and damaged labels

- workers or suppliers using no PPE or makeshift personal protection devices (e.g. a towel wrapped around face)

- ignition sources such as heat / sparks / open flames in the neighbourhood of off-loading or transferring operations

- Workers using makeshift tools for offloading or transferring chemicals

STEP 5: DISCUSS POSSIBLE ACTIONS WITH WORKERS AND SUPERVISORS

Confirm with workers and supervisors the feasibility of immediate actions, particularly the ones related to good practices in chemical handling (you may want to check the safety information in the relevant MSDS)

Tool 3.9 Prevent and reduce risk at site – Specific: Process Areas

The objective is to identify ways to prevent and reduce risks from specific hazards related to losses in the process areas at site.

This tool is available for download in Word format on the Responsible Production CD
STEP 1: REVIEW THE HAZARDS YOU HAVE IDENTIFIED
Go back to the list of hazards and hazard hotspots you have identified.
Select the hotspots involving process operations at site
STEP 2: IDENTIFY POSSIBLE CAUSES
Go through your list of hotspots and, taking into account stakeholder concerns, pose yourself the following questions:
☐   Are there any drips, leaks or spills or unwanted emissions? (e.g. from leaking valves, pipes, pumps, etc)
☐   Is all equipment operating properly at design capacity/efficiency?
☐   Are there any bottlenecks where production is held up?
☐   Is energy, water or raw chemical materials being wasted?
☐   Can you estimate the quantities being wasted?
☐   Are wasted chemicals adding up to the volume of wastewater you are treating?
☐   Are wasted materials adding up to the quantities of wastes you are sending off-site for treatment or disposal?
☐   Are there any opportunities for reuse or recycling chemicals in the process?
☐   Can you reduce waste by maximizing dedication of process equipment and thus reduce equipment cleaning frequency?
☐   Can you reuse water from treatment plants in the process?
☐   Can any waste heat be used elsewhere?
☐   Can any hazardous raw materials or consumables be substituted for less hazardous materials?
☐   Do you effectively segregate by-product streams to improve internal and external reuse options and reduce the cost of disposal?
☐   How much packaging waste you are generating due to bad housekeeping and accidental spillage and contamination of packages?
☐   Is the state of general housekeeping affecting process flow or causing spills?

☐ Are materials and chemical supplies being stored at the shop-floor in such a way as to minimise the risk of damage or waste?
☐ Can you reduce the quantities of chemicals being stored at the shop-floor?
☐ Can preventive maintenance be use to optimise the efficiency of major equipment and ancillary systems (e.g. furnaces, boilers, etc.)?
☐ Are workers wearing approved personal protective equipment?
☐ Are process areas sufficiently illuminated?
Mark identified causes on your list

STEP 3: IDENTIFY PREVENTIVE MEASURES

Discuss with workers, supervisors and external stakeholders (where appropriate) possible preventive actions, particularly the ones related to process optimization, process safety management and to good practices in chemical handling (you may want to check the safety information in the relevant MSDS)

STEP 4: CHECK OPPORTUNITIES FOR IMMEDIATE RISK REDUCTION ACTIONS

Conduct a visual inspection of your process areas and, taking into consideration stakeholder concerns, write down your observations on a work sheet, noting all situations where you see, and possible immediate actions to implement. Pay particular attention to:

- Drips, leaks and spills
- Production bottlenecks
- Evidence of wasted energy (including heat), water or raw materials
- Quantities of chemicals wasted
- Excess quantities of raw materials stored at the shop-floor
- Incompatible chemicals stored together at the shop-floor
- Equipment, packages, and materials obstructing work flow and material handling
- Contaminated packages of raw materials and chemicals used in the process
- Workers using no PPE or makeshift personal protection devices (e.g. a towel wrapped around face)
- Dark areas in the shop-floor

STEP 5: DISCUSS POSSIBLE ACTIONS WITH WORKERS AND SUPERVISORS

Confirm with workers and supervisors the feasibility of immediate actions, particularly the ones related to process optimization, process safety management and to good practices in handling chemicals (you may want to check the safety information in the relevant MSDS)

Tool 3.10 Prevent and reduce risk at site – Specific: Storage of Chemicals

The objective is to identify ways to prevent and reduce risks from specific hazards related to storage of chemicals at site.

This tool is available for download in Word format on the Responsible Production CD

STEP 1: REVIEW THE HAZARDS YOU HAVE IDENTIFIED

Go back to the list of hazards and hazard hotspots you have identified.

Select the hotspots involving storage of chemicals at site. Note that not all of the requirements below will be applicable to the chemicals being stored in your facility. These are indicative only, and should be reviewed taking into account the characteristics of your facility and of the chemicals being handled (as per the respective MSDS). You should also take into account the relevant laws/regulations/codes of practice that are applicable to your operation and adjust these requirements to your particular situation.

STEP 2: IDENTIFY POSSIBLE CAUSES

Go through your list of hotspots and, taking into account stakeholder concerns, pose yourself the following questions:

☐ Can purchasing practices be implemented to reduce your inventory and quantities stored at site, and to avoid waste from out-of-date chemicals?

☐ Are the vessels used for storage of chemical reagents meeting the requirements in the suppliers MSDS?

☐ Does each tank have accurate and reliable tank level indication, with high level alarms, when appropriate?

☐ Is each tank provided with an individual earth strap?

☐ Do all storage tanks permanently display the required Hazchem/Hazmat labels?

• Are the following symbolic warning signs displayed at the storage areas? :
  ☐ No entry to unauthorised persons
  ☐ No smoking
  ☐ No naked flames
  ☐ Protective clothing to be worn
  ☐ Warning of hazardous substance
  ☐ First aid procedure
  ☐ Other symbols as required by law/regulations/codes of practice

- Are storage areas:
  - ☐ Protected from the infiltration of rain and flood water?
  - ☐ Well ventilated?
  - ☐ Properly fenced/secured/other, so that no unauthorized personnel may enter?
  - ☐ Fitted with sealed floors with drainage controlled to prevent contamination of water courses?
  - ☐ Equipped with drip / retention trays (when storing tanks or drums) to prevent any liquids escaping to ground water or drainage points.
  - ☐ Organized in such a way that, where drums are on pallets and stored above ground level, they are bound together (preferably to the pallet) to prevent them from falling?
  - ☐ Organized in such a way that the chemicals being stored are easily accessible and free of obstacles?
  - ☐ Organized in such a way that emergency evacuation is easy and free of obstacles?
  - ☐ Organized in such a way that incompatible materials are not stored together?
  - ☐ Organized in such a way that flammable liquids or unstable substances are not stored next to flammable substances or packaging?
  - ☐ Kept away from potable water and sewerage systems?
  - ☐ Organized in such a way that the required Hazchem/Hazmat labels are easily displayed?
  - ☐ Adhering to the following points regarding pressurized gas bottles? :
    - ☐ These are kept in good condition and not corroded or damaged
    - ☐ These are securely fastened to prevent them falling over whilst not in use and in storage
    - ☐ These are fitted with a protective cap when not in use (i.e. in storage or whilst being transported)

- Do you ensure that in bunded areas:
  - ☐ The floor is sited on a solid impervious area and enclosed by a leak-proof bund wall?
  - ☐ The bund wall has no drain holes or any other opening which could allow any effluent to escape from the bund area?
  - ☐ The bund walls are kept clean and free of any superfluous material?
  - ☐ The bund area is capable of safely containing at least 110% of the total storage tank contents in the case of a single tank installation, and in the case of a multiple tank installation, 110% of the contents of the largest tank?
  - ☐ Where two or more vessels are connected for simultaneous use, the bund is able to accommodate the combined capacity of the tanks?
  - ☐ The bund area is protected from storm water ingress from other areas?
  - ☐ A spillage control system is in place, and is manually operated?
  - ☐ Field control stations are located in positions remote from exposure to spillages?
  - ☐ The drainage valve to empty the bund is positioned so that it can be safely operated?
  - ☐ Other requirements as per applicable law/regulations/codes of practice are implemented?

- Do you assure that a fully operational safety shower and eye wash bath is provided at each storage areas and is:
  - ☐ Identified with appropriate signage?
  - ☐ Platform operated with attached eyewash?
  - ☐ Situated near the potential spillage/risk area?
  - ☐ Fitted with an audible alarm, routed to the control room?
  - ☐ Supplied by a wash water source of uncontaminated potable water?
  - ☐ Equipped with a wash water isolating valve located at the shower that is locked in the open position with a key controlled by means of an official key register?

☐ Is a wash water facility available at the storage site for use in emergency situations?

☐ Is there a first aid kit (including antidote kit and emergency rescue equipment if relevant) situated near each safety shower?

☐ Are absorbent materials (and/or stabilizing reagent) and shovels readily available close to potential spillage areas? Are the absorbent materials in a dry condition?

- Do you make sure that:
  - ☐ Public access to hazardous chemicals storage areas is prevented?
  - ☐ An appointed responsible person checks the storage facility regularly?
  - ☐ Entry into hazardous chemicals storage areas is only allowed to competent persons?
  - ☐ Adequate personal protective equipment is worn when entering storage areas, if required in the MSDS?
  - ☐ Storage and bund areas are equipped with the appropriate type of fire extinguishers?

Mark identified causes on your list

STEP 3: IDENTIFY PREVENTIVE MEASURES

Discuss with workers, supervisors and external stakeholders (where appropriate) possible preventive actions, particularly the ones related to good practices in chemical storage (you may want to check the safety information in the relevant MSDS)

STEP 4: CHECK OPPORTUNITIES FOR IMMEDIATE RISK REDUCTION ACTIONS

Conduct a visual inspection of the areas you are using for the storage of chemicals at the site and, taking into consideration stakeholder concerns, write down your observations on a work sheet, noting all situations that you see, and possible immediate actions to implement.

- Pay particular attention to:
  - ☐ chemical substances spilled on the floor
  - ☐ lids that are not tightly sealed where the contents are exposed to air, humidity, etc during off-loading or transferring operations
  - ☐ containers that are partially or completely uncovered where fumes may escape
  - ☐ damaged or defective chemical containers
  - ☐ deteriorated chemical packaging due to leakage, damage, floor water, humidity, etc
  - ☐ unlabelled containers and damaged labels
  - ☐ unclean bunds
  - ☐ workers using no PPE or makeshift personal protection devices (e.g. a towel wrapped around face)
  - ☐ ignition sources such as heat / sparks / open flames in the neighbourhood of off-loading or transferring operations
  - ☐ pallets stored above ground level holding drums that are not bound together
  - ☐ obstructed access to stored chemicals
  - ☐ obstructed evacuation routes and emergency exits
  - ☐ materials or equipment obstructing the access to fire extinguishers, safety showers or first aid/emergency response kits
  - ☐ workers using makeshift tools for handling chemical containers

STEP 5: DISCUSS POSSIBLE ACTIONS WITH WORKERS AND SUPERVISORS

Confirm with workers and supervisors the feasibility of immediate actions, particularly the ones related to good practices in the storage of chemicals (you may want to check the safety information in the relevant MSDS)

Tool 3.11 Prevent and reduce risk at site – Specific: Transport of Chemicals

The objective is to identify ways to prevent and reduce risks from specific hazards related to the transport of chemicals off site.

This tool is available for download in Word format on the Responsible Production CD

STEP 1: REVIEW THE HAZARDS YOU HAVE IDENTIFIED

Go back to the list of hazards and hazard hotspots you have identified.

Select the hotspots involving the transport of chemicals off site

STEP 2: IDENTIFY POSSIBLE CAUSES

Go through your list of hotspots and, taking into account stakeholder concerns, pose yourself the following questions:

- Do you know if delivery vehicle drivers:
  - ☐ Are literate, properly trained and licensed for operating the vehicles?
  - ☐ Are competent to deal with accidents and emergency procedures and first aid treatment?
  - ☐ Are trained and inducted for site specific off-loading procedures?
  - ☐ Only leave unattended loads in secured areas away from members of the public?

☐ Do you know whether packages that need to be segregated in accordance with applicable segregation requirements are not being packed together onto or in the containers/vehicles?

☐ Do you make sure that all packages are externally inspected for damage, and only sound packages are loaded on the vehicles for transport off-site?

☐ Do you make sure that drums are stowed in an upright position, unless otherwise authorized by the competent authorities, and that all goods are always properly loaded and adequately braced, where necessary, with securing material to suit the mode(s) of transport for the intended journeys?

☐ Do you make sure that goods loaded in bulk are evenly distributed within the container/vehicle?

☐ Do you make sure that that the container/vehicle and packages are properly marked, labelled and placarded, as appropriate?

☐ Are MSDS, first aid procedures or other informational materials carried in the vehicle in the native language of the driver?

☐ Do your transporters have inventory controls and/or chain of custody documentation to prevent loss of chemicals during shipment?

☐ Do you know if your suppliers and distributors have ever conducted a risk assessment of routes to be used for delivery?

☐ Do you know if local/regional authorities have available hazard road maps that you can use in planning your transport routes?
☐ Are transport routes periodically re-evaluated by you or your suppliers and distributors?
☐ During transportation, is distribution ever stopped when severe weather conditions exist?
☐ Can you make sure that transportation of solid chemical reagents is performed dry?
☐ Have you made available safe routes for routing of delivery vehicles to your chemical off-loading area?
☐ Are suppliers' and distributors' drivers and operating staff conversant with the prescribed routes?

• Have you made sure that:
  ☐ The delivery routes are sign-posted?
  ☐ Hazards are identified and appropriate warning signs displayed?
  ☐ Minimum clearance heights are provided for?
  ☐ Safe speed limits are established and delivery vehicle drivers comply with the speed limits?
  ☐ Minimum turning circles are provided for?
  ☐ The delivery roadways are hard-surfaced and at least 6 m wide (depending on the type of vehicles used)?
  ☐ The vehicle does not need to reverse?
  ☐ Other as required by law/regulations/codes of practice?

Mark identified causes on your list

STEP 3: IDENTIFY PREVENTIVE MEASURES

Discuss with workers, supervisors, transporters and external stakeholders (where appropriate) possible preventive actions, particularly the ones related to good practices in the handling and transport of chemicals (you may want to check the safety information in the relevant MSDS).

STEP 4: CHECK OPPORTUNITIES FOR IMMEDIATE RISK REDUCTION ACTIONS

Conduct a visual inspection of transport operations, covering not only off-loading and loading at site, but also transport off-site. Make sure to include a visual inspection of the vehicles. Request one of your suppliers and transporters for permission to have one of your workers or supervisors accompany a random transport operation. The worker/supervisor selected should be trained in chemical safety and be fully aware of the potential risks involving the chemicals transported. Observations should be written on a work sheet, noting all situations where immediate actions can be implemented for reducing risks.

Particular attention should be paid to:

• Vehicle overload

• Shifting loads

• Damaged packages loaded in the vehicle

• Number of hours the driver has been on the road consecutively
• Speeding and disrespect for traffic regulations
• Stops where loads are left unattended near public areas
• Knowledge of normal and alternative routes
• Crossing high-density populated areas when viable alternatives exist
• Driving in dangerous weather conditions
• Lack or insufficient usage of PPE by vehicle driver
• Existence of absorbent materials (and/or stabilizing reagent) and shovels in the vehicle
• Existence of MSDS and written emergency instructions in the native language of the driver
• Availability of fire extinguishers, and first aid/emergency response kits in the vehicle

STEP 5: DISCUSS POSSIBLE ACTIONS WITH TRANSPORTERS

• Confirm with transporters the feasibility of immediate actions, particularly the ones related to good practices in the handling and transport of chemicals (you may want to check the safety information in the relevant MSDS)

Tool 3.12 Business Case

The objective of applying the business case tool is to better understand why it is important to manage chemical hazards and risks and improve chemical safety. The business case tool should use the information already generated in the cost analysis you have done by applying Tool 3.2. The business case also needs to take into account stakeholder concerns, and impacts and opportunities related to the environment, society and the economy. The business case will help you to develop your focus on what is really important.

This tool is available for download in Word format on the Responsible Production CD		
BUSINESS CASE		
Identify an accident scenario and develop a business case based on the scenario.		
Impact of improved chemical safety management on your business	Explain	Ranking 1 = would lead to going out of business 2 = would require investment that would slow growth and profitability for a period of time 3 = would have little impact on business but makes sense 4 = would result in growth and improved profitability 5 = would result in growth, improved profitability and leadership in sector
STEP 1: UNDERSTAND FINANCIAL IMPACT		
Will improved chemical safety management increase or reduce operating costs? (refer to cost analysis)		
Short term		
Medium term		
Long term		
Will improved chemical safety management increase or decrease the cost of borrowing?		
Do you have the capacity for any needed capital expenditure requirements?		

STEP 2: UNDERSTAND SOCIAL IMPACT		
Will improved chemical safety management make it easier to do business in your community? (license to operate)		
Will improved chemical safety management make it easier to hire and retain staff?		
Will improved chemical safety management have an effect on civil society (NGO) interventions that might affect your business?		
Will improved chemical safety management improve the health of your employees and those who in the community in which you operate?		
STEP 3: UNDERSTAND ENVIRONMENTAL IMPACT		
Will improved chemical safety management improve the local environment to the benefit of your business?		
STEP 4: UNDERSTAND ECONOMIC IMPACT		
Will improved chemical safety management improve the livelihood of people in the community in which you operate?		
STEP 5: UNDERSTAND LEGAL IMPACT		
Will improved chemical safety management reduce the cost of infractions?		
Will improved chemical safety management reduce the impact on business of infractions?		

STEP 6: UNDERSTAND IMPACT ON COMPETITIVENESS		
Will improved chemical safety management improve your position in relation to your competitors?		
Will improved chemical safety management improve your position in relation to your buyers?		
Will improved chemical safety management improve your position in relation to your suppliers?		
Will improved chemical safety management create opportunities for innovation?		
Will improved chemical safety management create opportunities to sell into new markets? To new buyers?		
STEP 7: UNDERSTAND IMPACT ON PRODUCTIVITY		
Will improved chemical safety management reduce work stoppages, slow downs and lost time accidents?		
Will improved chemical safety management increase unit production per man/hour?		

TOTAL	• Add all the scores in the last column.
AVERAGE SCORE	• Divide the total by 20 (or by the number of boxes you have scored) • An average score of 3 or over provides a solid business case. • An average score of between 2 and 3 would indicate that the business environment is difficult and that there may be a problem of 'free riders' - that is companies with poor chemical safety management practices who are not penalised for it by the market, legal requirements or the communities in which they operate. A score in this range would suggest that work needs to be done at the sector level to even the playing field through collective agreement to improve practice. • Any score of '1' should trigger a re-evaluation of the business model.

Tool 4.5 Procurement checklists

The objective of this tool is to ensure that your company takes chemical safety and environmental protection issues into consideration in purchasing decisions, towards sustainable procurement.

In its wider context, sustainable procurement is about the process of purchasing goods and services that take into account the social, economic and environmental impact that such purchasing has on people and communities. It is about considering what products are made of, where they have come from, who has made them, how they are transported and how they are eventually disposed of. It may even be about whether the purchase requires to be made at all.

This tool is available for download in Word format on the Responsible Production CD
STEP 1 ESTABLISH A PROCUREMENT POLICY.
Draft a procurement policy and discuss it with top management. Do not forget that your main aim is to assure that safety considerations and environmental protection are integrated when procuring chemicals and services in your operations
A simple policy would say something like: "It is our policy to demonstrate responsible and sustainable management in the acquisition of goods and services so as to ensure that such acquisitions have the minimum impact on our environment and society"
STEP 2 MAKE SURE THAT ALL LEGISLATIVE AND REGULATORY REQUIREMENTS ARE COMPLIED WITH
Refer back to your legal register. Make sure to list all legal and regulatory requirements your company should observe and comply with when buying chemical products, and related services. Keep in mind that your company or sector may be subscribing to some code of practice with specific requirements for procurement systems. Go back to the procurement policy and check if it reflects the requirements to which your company is subscribing.
STEP 3 PREPARE PROCUREMENT CHECKLISTS
Taking the commitments expressed in the company procurement policy, prepare procurement checklists for each hazardous chemical and service contracted related to the supply, transport or processing of chemicals at your operations.
For this it is very important that you evaluate carefully each chemical product and service your company is procuring. Evaluate the product.

You may wish to ask yourself the following general questions and reflect some of the principles below in procurement practices and checklists:

☐ Do you really need this chemical product in the first place or could you replace it for other, less hazardous ones?

☐ Do you really need the amounts of hazardous chemicals you are using or could you use less? The best environmental option is to purchase and use less.

☐ Procure goods and services, that reflect up-to-date specifications or standards for environment and sustainability.

☐ Prohibit the use of chemical products that are potentially damaging to the environment where a less environmentally damaging alternative is available.

☐ Specify products that are the most energy efficient available, both in their manufacture and operation.

☐ Specify products that cause minimal damage to the environment in their manufacture, distribution, use and disposal.

☐ Is the product excessively packaged? This wastes resources and disposal is also a great cost.

☐ Will the product require special disposal arrangements?

☐ Where possible, purchase local products and services.

☐ Does the product come with full information regarding hazards and risks? Does it come with a Material Safety Data Sheet?

☐ Where possible use products with recognised certification marks.

☐ Have health and safety standards been met by the supplier?

Most of the time you will not be able to discontinue the procurement of hazardous chemicals nor find available alternatives, so your procurement checklists will need also to take into account specific measures for reducing risks that you can not totally avoid. You should make sure to consider the following principles:

☐ Hazardous chemicals should only be purchased from dependable, reputable manufacturers, suppliers and distributors who assure the health and safety of their employees, and operate in such a way as to prevent accidents that may affect the public and the environment.

☐ Proper procurement of hazardous chemicals through an appropriately structured procurement contract will ensure that risks associated with the distribution, transportation and off-loading of hazardous chemicals are effectively controlled and managed.

☐ Product delivery documentation should correctly identify the hazardous chemicals being carried in order to ensure that proper response action can be taken in cases of vehicle accidents and that proper off-loading, placement and storage at final destination can occur.

☐ Guarantees should be obtained from suppliers and/or distributors, that packaging and transport containers comply with specifications under national legislation on road transport of dangerous goods, and that containers are leak free and watertight, to prevent spillage into the environment and public domain.

☐ Off-loading agreements should be established specifying the requirements needed to ensure the safe transfer of hazardous chemicals from the supplier delivery vehicle into the storage facility.

☐ Effective communication systems and procedures need to be in place to allow for changes to agreed delivery schedules.

☐ Procurement contracts should include the supply of risk assessments of routes to be used for delivery of the hazardous chemicals by suppliers and distributors.

Where your suppliers and distributors subcontract a transporter to distribute the hazardous chemicals, guarantees should be obtained that this service is performed by a competent and safe operator.

Do not specify sustainable products by brand name. Particular brands may only be available from one source and this would be anti competitive. Instead specify what products do as this will allow all contractors equal opportunity to supply products that meet the specification.

5.4 Independent assurance

This is an advanced tool. You may wish to consider if using this tool will bring an added value, taking into account the size of your operations, the number and type of stakeholders you are engaging with, and the resources you have available for this.

The objective of independent assurance is to provide an independent assessment of the credibility of your public communications about your performance. The outcome of independent assurance is typically a public assurance statement signed by the assurance provider and attached to your public communications. Assurance also provides significant internal benefits by providing an independent view of your performance and the underlying systems and processes. It is an excellent learning tool.

This tool is available for download in Word format on the Responsible Production CD
STEP 1: DECIDE IF ASSURANCE IS IMPORTANT
Do you need it to build credibility with external stakeholders?
Do you need it as an internal learning tool?
STEP 2: DECIDE WHO YOUR AUDIENCE FOR ASSURANCE IS. THIS WILL BE RELATED TO THE AUDIENCE FOR YOUR COMMUNICATIONS
STEP 3: DECIDE WHAT TYPE OF ASSURANCE PROVIDER IS MOST CREDIBLE IN THE EYES OF YOUR AUDIENCE. ASSURANCE IS TYPICALLY PROVIDED BY THE FOLLOWING:
Assurance providers working for accounting firms (e.g. the people who provide financial audits)
Assurance providers working for certification bodies (e.g. the people who provide ISO 14001 certification)
Assurance providers working for sustainability consultancies and NGOs (e.g. people who are known for their subject matter knowledge)
Expert panels made up of a diverse range of people who know your business and its impact
STEP 4: HAVING CHOSEN THE TYPE OF PROVIDER, IDENTIFY POSSIBLE PROVIDERS AND EVALUATE THEM. YOU SHOULD EVALUATE THEM ACCORDING TO:

• Their knowledge and competence
  • Subject matter knowledge (chemical hazards and associated risks and impacts)
  • Assurance procedure knowledge
  • Sector and market knowledge

• Their experience – have they done this before?
• Their credibility and reputation
• Their independence and impartiality (they must be free from conflict of interest)
• Their availability
• Their cost
STEP 5: ENGAGE AN ASSURANCE PROVIDER
Invite proposals.
Evaluate the proposals.
Select a provider.
STEP 6: NEGOTIATE THE CONTRACT
• Agree on the standards to be used for the engagement (e.g. AA1000AS)

• Agree on the scope of the assurance
  • The subject matter to be covered
  • The criteria to be used
  • The organisational boundaries
  • The time boundaries

• Agree on the assurance team
• Agree on the depth of investigation and level of effort (time to be allocated by the team)
• Agree on the start and completion dates
• Agree on the cost
• Agree on dispute resolution procedures
• Agree on what must be contained in the statement
STEP 7: CONDUCT THE ASSURANCE
STEP 8: FINALISE AND PUBLISH THE ASSURANCE STATEMENT. THE STATEMENT SHOULD INCLUDE THE FOLLOWING
a) **Title** - Independent Assurance Statement

b) **Note on audience** - If there is no list of intended users provided in the Report, the organisation leading the assurance engagement should consider identifying the agreed audience of the Report in the Assurance Statement. Otherwise, a reference to the location of the list in the Report can be useful to readers.

c) **Note on roles and responsibilities** - The roles and responsibilities of the assurance provider and reporting organisation should be clearly stated. The lead provider as well as the other experts on the team should be identified. The organisation should identify who within the organisation commissioned the engagement.

d) **Description of the scope of the assurance engagement** - The statement should state which sections of the report pertain to the subject of the assurance engagement. Any exclusions and limitations should be explained.

The statement should state how the report has defined:

- the organisational boundaries

- the period of time covered

- the subject matter covered (the identification of material issues is the responsibility of the organisation).

e) **Note on criteria** - The statement should identify the criteria used for the engagement, their suitability and their source.

f) **Disclosure of methodology** - The statement should provide a description of the methodology used during the engagement. This should include:

- the identification of the standards and principles used and how they were used (e.g. for reference or as the basis for determining compliance) including any limitations to use

- commentary on the level of assurance obtained by the provider

- the evidence sought (quantity and quality of information)

- a description of the evidence gathering methods, including the depth of investigation

- any constraints or limitations on the access to or sufficiency of evidence

g) **Conclusions concerning the principles** - At a minimum this should include conclusions on:

- the robustness of the process and systems used by the organisation to determine material issues

- any material omissions or misstatements

- the robustness of the process and systems used to understand as completely as possible the impacts and opportunities associated with material issues

- the reliability of the data and information

- the robustness of the process and systems used to identify responses

	• the responses provided (i.e. objectives, targets) in relation to stakeholder interests
h)	**Findings, commentary and recommendations** - This should include:
	• findings concerning assertions relating to compliance to agreed standards, codes, regulations and policies
	• commentary and recommendations on areas of past and future improvement;
	• commentary and recommendations on current and future values & strategy
	• commentary and recommendations on Report and assurance scope
i)	**Disclosure on competencies, impartiality and independence** - This must be provided for all Assurance Providers and experts involved in the assurance process.
j)	**Signature** - Name of the lead Assurance Provider, date and location of the organisation

Appendix Good practice and procedures checklists

The following questions are structured along the five steps of the Responsible Production model. These checklists are not extensive or exhaustive and only intended to provide another source of guidance and help.

1. Identify Responsible Production Issues

2. Get the right people involved

3. Develop your plan

4. Put the plan into practice: Train and Communicate

5. Evaluate how well you did

Along with the questions on the dashboard worksheets provided in the Responsible Production Framework Booklet, the following questions can assist you in undertaking a gap analysis against key requirements of a chemical safety management system based upon the 5 steps of the Responsible Production model.

Not all questions will apply to the characteristics of your company and to the context of your business. Taking into account the characteristics of your company, go through these questions in order to establish a baseline of where your organisation stands. This is an essential starting point before moving onto the implementation of the tools in the Responsible Production Toolkit. It will help you to better understand where to focus your efforts and to identify 'low-hanging fruit', that is, actions than you can start implementing immediately without allocating a significant amount of resources and time.

At the same time, some of the following questions will point you to advanced practices requiring additional effort and commitment throughout your company. These will help you to identify areas where you can further improve your chemical safety management systems as you move towards excellence in best practice.

1. Identify Responsible Production Issues

Understanding the Process Flow

1.1 ☐ Are there any process flow diagrams or charts, clearly mapping the flow of chemicals, where they are located and used?

1.2 ☐ Is there any information on the flow of chemicals outside the company?
- where are chemical raw materials coming from?
- how are these being transported and in what quantities?
- where are chemical products, by-products and wastes being transported to?
- how are these being transported and in what quantities?
- where and how are these being used?

1.3 Is there any system for keeping up an updated inventory of chemical raw materials, products, wastes and by-products, clearly identifying at least the following information?
- ☐ Where they are found, stored and/or used
- ☐ How they are being stored and handled
- ☐ The chemical name, trade name / CAS number
- ☐ Amount in use
- ☐ Hazard classification (R-Phrases / GHS classification, other)

1.4 ☐ If not, is information on stock control being somehow linked to hazard control, or chemical safety?

Risk assessment and prioritization

1.5 ☐ Are there systematic procedures for hazard identification and risk assessment?

1.6 ☐ Have chemical hazards been identified and mapped in the company?

1.7 ☐ Have risk assessments been carried out in the company? Have these followed the established

procedures (if any)?

1.8 ☐ Is there a procedure for keeping hazard identification and risk assessments updated?

1.9 ☐ Is an incident case history record kept?

1.10 ☐ Is there a procedure to give feedback from hazard identification and risk assessments in order to move towards improved safety?

1.11 ☐ Are there procedures for making relevant parts of risk assessments and consequence analyses available to public authorities and the community?

Standards, codes, laws and regulations

1.12 ☐ Is there complete documentation related to engineering, operational procedures, instructions, and other safety related matters?
Is the documentation:
 ☐ comprehensive
 ☐ clearly written
 ☐ easily retrievable

1.13 ☐ Is there a document control system?

1.14 ☐ Are there procedures to ensure that management is aware of, and in compliance with, all legal obligations?

1.15 ☐ Does the company keep an updated legal register?

1.16 ☐ Is there a process that incorporates all relevant national (and where relevant international) standards, codes of practice, and guidance from public authorities and other bodies into internal practices?

2. Get the right people involved

Identify stakeholders

2.1 ☐ Has the company identified its relevant stakeholders, taking into account the various organisations, institutions and groups of people it already engages with (suppliers, buyers, employees, contractors, partners, transporters, etc.), as well as local and governmental authorities, community groups, and others?

2.2 ☐ Is there a system/procedure for identifying or mapping relevant stakeholders?

Understand stakeholders and how they engage

2.3 ☐ Is there a system/procedure for evaluating and understanding stakeholders' importance?

2.4 ☐ Is there a system/procedure for profiling stakeholders?

Engaging stakeholders

2.5 Is there a system/procedure for sharing information on safety-related experiences (e.g., accidents/near-misses):
 ☐ within the company
 ☐ with other companies

2.6 ☐ Does the company actively co-operate with other companies in avoiding domino effects of accidents?

2.7 ☐ Is there participation in co-operative work with respect to, e.g.: systems for sharing information on accidents/near misses; systems for offering assistance to other companies?

2.8 ☐ Does the company participate regularly in conferences/workshops related to chemical safety?

2.9 ☐ Does the company participate in industry, professional, and trade associations (local, regional, etc.)?

2.10 ☐ Does the company participate in local co-operation groups related to safety?

2.11 ☐ Is there a specific policy/procedure for co-operation and communication with the authorities?
- ☐ Are people specifically appointed for this task?

2.12 ☐ Are there well-established and trustful channels for communication with the (national) public authorities, both formal and informal?
- ☐ Are there regular planning and information meetings?
- ☐ Are there the means to easily get advice from authority contact(s)?
- ☐ Is there actual, regular communication with public authorities?

2.13 ☐ Are there well-established and trustful channels of communication with the local authorities and community, both formal and informal?
- ☐ Are there regular planning and information meetings?
- ☐ Are there the means to easily get advice from local authority and community contact(s)?
- ☐ Is there actual, regular communication with local authorities and community s?

2.14 ☐ Are there the means for ensuring compliance with public authorities' requirements and requests?

2.15 ☐ Are there specific policies/procedures for communicating with the community/public (including citizens' committees) and other stakeholders?
- ☐ Are there employees responsible, and specifically trained, for this task?
- ☐ Is information provided to the public and other stakeholders in a format that is easily understood by the average citizen and by journalists?
- ☐ Is there co-operation with authorities and local officials when communicating with the public?
- ☐ Does the company participate in the community advisory panel (if there is one)?
- ☐ Is there active participation with the top management in the process of communication with the public?

2.16 ☐ Is there a system for maintaining an ongoing dialogue with all the relevant people/groups in the neighbourhood (including, for example, housing areas, schools, hospitals and other health/medical services, nursing homes, commercial centres)?
- ☐ Does it involve direct communication with the public (through, for example, a local council/committee for co-operation in safety questions, regular "open house" arrangements, and/or seminars on the hazards and risks in the facility)?
- ☐ Does it include regular reporting of incidents, etc.?
- ☐ Are there readily accessible lines for telephone and e-mail for the public to communicate with the company?

2.17 ☐ Is there a mechanism for checking that information has been well received and understood?

2.18 ☐ Is there a system for handling inquiries and complaints concerning safety issues from the public?
    ☐ Is it a formal system with documentation?
    ☐ Is feedback given efficiently, as soon as possible, by a specially appointed person?
    ☐ Does it include additional feedback after preventive actions have been taken?

2.19 ☐ Is there a procedure to provide the media with relevant and quick information (especially in the event of an incident)?

2.20 ☐ Is there a well developed system for communication and co-operation with the suppliers to the company?

2.21 ☐ Is there a well developed system for communication and co-operation with customers?

2.22 ☐ Is there a system for giving training to key members of the public on the safety programme of the company?
Does it include training for:
    ☐ local schools
    ☐ hospitals and other health/medical facilities that might be involved in the event of an accident
    ☐ nursing homes in the area
    ☐ neighbouring commercial companies

3. Develop your plan

Identify opportunities for risk and cost reductions

GENERAL BEST PRACTICES
WAREHOUSING AND HANDLING OF CHEMICALS

3.1 Are the following basic requirements fulfilled?
    ☐ relevant information on all hazardous substances available
    ☐ proper labelling on all packaging and tanks
    ☐ adequate security measures taken

3.2 Is there a procedure for storage of various hazardous substances, including a sound policy on:
    ☐ minimising the amount of stored hazardous substances
    ☐ securing a high quality storage facility (both in terms of the conditions of the facility and the quality of handling substances at the facility)
    ☐ keeping certain substances which are incompatible segregated from each other
    ☐ limiting the amount per storage unit
    ☐ proper storage (e.g., limiting the height of storing bulk chemicals and small packaging chemicals)
    ☐ having adequate containment for spills
    ☐ installing adequate fire protection facilities
    ☐ co-ordination of transfers to/from the storage

3.3 ☐ Can purchasing practices be implemented to reduce warehousing costs, inventories and quantities stored at site, and to avoid waste from out-of-date chemicals?

3.4 Are the following symbolic warning signs displayed at the storage areas?:
    ☐ No entry to unauthorised persons
    ☐ No smoking
    ☐ No naked flames
    ☐ Protective clothing to be worn
    ☐ Warning of hazardous substance
    ☐ First aid procedure
    ☐ Other symbols as required by laws/regulations/codes of practice

3.5 Are storage areas:
☐ Located as to avoid the possibility for an accident to spread to other areas ("domino effects")?
☐ Protected from infiltration of rain and flood water?
☐ Protected from infiltration of rain and flood water?
☐ Well ventilated?
☐ Properly fenced/secured/other, so that no unauthorized personnel may enter?
☐ Organized in such a way that, where drums are on pallets and stored above ground level, they are bound together (preferably to the pallet) to prevent them from falling?
☐ Organized in such a way that the chemicals being stored are easily accessible and free of obstacles?
☐ Organized in such a way that emergency evacuation is easy and free of obstacles?
☐ Organized in such a way that immiscible materials are not stored together?
☐ Organized in such a way that flammable liquids or unstable substances are not stored together?
☐ Organized in such a way that flammable liquids or unstable substances are not stored next to flammable substances or packaging?
☐ Kept away from potable water and sewerage systems?
☐ Organized in such a way that the required Hazchem/Hazmat labels are easily displayed?
☐ When storing pressurized gas bottles, are these kept in good condition and not corroded or damaged?
☐ Are these securely fastened to prevent them falling over whilst in use and in storage?
☐ Are these fitted with a protective valve cap when not in use? (i.e. in storage or whilst being transported)

3.6 Storage vessels/tanks
☐ Are the vessels used for storage of chemical reagents meeting the requirements in the suppliers MSDS?
☐ Does each tank have accurate and reliable tank level indication, with high level alarms, when appropriate?
☐ Is each tank provided with an individual earth strap?
☐ Do all storage tanks permanently display the required Hazchem/Hazmat labels?

3.7 Is there a system to assure that in bund areas:
☐ The floor is sited on a solid impervious area and enclosed by a leak-proof bund wall?
☐ The bund wall has no drain holes or any other opening which could allow any effluent to escape from the bund area?
☐ The bund walls are kept clean and free of any superfluous material?
☐ The bund area is capable of safely containing at least 110% of the total storage tank contents in the case of a single tank installation, and in the case of a multiple tank installation, 110% of the contents of the largest tank?
☐ Where two or more vessels are connected for simultaneous use, the bund is able to accommodate the combined capacity of the tanks?
☐ The bund area is protected from storm water ingress from other areas?
☐ A spillage control system is in place, and is manually operated?
☐ Field control stations are located in positions remote from exposure to spillages?
☐ Meet other requirements as per applicable laws/regulations/codes of practice?

3.8 Is there a system to assure that a fully operational safety shower and eye wash bath is provided at each storage area and is:
- ☐ Identified with appropriate signage?
- ☐ Platform operated with attached eyewash?
- ☐ Situated near the potential spillage/risk area?
- ☐ Fitted with an audible alarm, routed to the control room?
- ☐ The wash water source is uncontaminated potable water?
- ☐ The wash water isolating valve located at the shower is locked in the open position and the key controlled by means of an official key register?

3.9 ☐ Is there a first aid kit (including antidote kit and emergency rescue equipment if relevant) situated near to each safety shower?

3.10 ☐ Are absorbent materials (and/or stabilizing reagent) and shovels readably available close to potential spillage areas?
- ☐ Are the absorbent materials in a dry condition?

3.11 Is there a system to assure that:
- ☐ Public access to hazardous chemicals storage areas is prevented?
- ☐ An appointed responsible person checks the storage facility regularly?
- ☐ Entry into hazardous chemicals storage areas is only allowed to competent persons?
- ☐ Adequate personal protective equipment is worn when entering storage areas, if required in the MSDS?
- ☐ Storage and bund areas are equipped with the appropriate type of fire extinguishers?

GENERAL BEST PRACTICES
PLANT ORGANISATION, DESIGN AND HOUSEKEEPING

3.12 ☐ Are all areas with the possibility of fire, and with the possibility of having contaminated extinguishing water, constructed to contain the water and route it to a place where it can be controlled?

3.13 Are process areas organized and designed in such a way to assure that:
- ☐ Facilities are regularly cleaned and tidied?
- ☐ Ventilation is appropriate?
- ☐ Process areas are sufficiently illuminated?
- ☐ There are designated walkways away from truck traffic?
- ☐ Emergency exits are marked on buildings?
- ☐ Caution signs are installed?
- ☐ There is easy access for the fire brigade in the case of an emergency?
- ☐ Workers have access to and are wearing approved personal protective equipment?

GENERAL BEST PRACTICES
OFF-LOADING AND TRANSFER OF CHEMICALS

3.14 ☐ Are all areas for loading and unloading hazardous chemicals appropriately equipped with facilities for containment of spills?

3.15 ☐ Is off-loading only conducted by a dedicated and competent person?

3.16 ☐ Is there adequate illumination of the delivery vehicle off-loading hose connection point?

3.17 ☐ Can the off-loading area sufficiently drain and contain any spillage or surface runoff water? (e.g. through bunds and dykes).
- ☐ Are bunds and dykes enough to cope with leaks during transfers?
- ☐ Are bunds and dykes being properly maintained?

3.18 ☐ Is the off-loading area equipped with absorbent material (and/or stabilizing reagent) and shovels?

3.19 Are the following symbols displayed at off-loading areas?:
☐ No entry to unauthorised persons
☐ No smoking
☐ No naked flames
☐ Protective clothing to be worn
☐ Warning of hazardous substance(s)
☐ First aid procedure
☐ Other symbols as required by laws/regulations/codes of practice

3.20 ☐ Does the company ensure that off-loading does not commence until the following inspections and actions have been carried out by a competent qualified worker?
• Verification of product delivery documents and delivery vehicle details
• Delivery vehicle driver and the qualified worker wear approved personal protective equipment
• An approved and totally functional first aid kit, antidote kit (if applicable) and emergency rescue equipment with appropriate personal protective equipment are available and in working order at the off-loading area
• If off-loading occurs out off visual distance, an effective and operational telephone or radio communication system to the control room is in place
• The safety shower and eye wash (including audible alarms) are tested and in working order
• Fire extinguishers are available
• Delivery vehicle is standing level, the park brake has been applied and the wheels chocked and earth straps connected
• Storage tank levels have been determined and verified
• Appropriate delivery line flange is unlocked

• Off-loading hose connection bolts have been tightened and tested
• Off-loading area has been secured from entry by unauthorized personnel
• Off-loading only commences when the supplier vehicle driver and qualified worker are both outside exposure area
• Qualified worker visually checks the off-loading hose couplings for leaks, from outside exposure area when off-loading commences
• Qualified worker and the vehicle supplier driver both remain in attendance at the off-loading installation to monitor the off-loading process
• Off-loading valve is immediately closed if any leaks or other abnormal conditions develop
• On completion of off-loading the supplier driver and qualified worker ensure that equipment used and contaminated during off-loading is flushed and any spillage properly handled in accordance with the requirements in the MSDS

3.21 Are all pipelines used for transferring chemicals
☐ Clearly identified?
☐ Clearly marked with an arrow indicating the direction of flow?
☐ (On lagged pipelines) clearly marked with labels and arrows that are placed at regular intervals

3.22 Does the company ensure that:
- ☐ All pipelines, pumps and valves used for transferring chemicals are inspected routinely and that procedures are established to deal with evidence of deterioration or leaks?
- ☐ When transferring flake or briquette reagents that are subject to volatize at room temperature or by contact with water/moisture: (i) the area is well ventilated and (ii) an audible alarm is installed at the discharge point
- • When manual transfer of chemicals takes place:
  - ☐ (i) It is only performed by a trained, competent worker wearing the appropriate PPE?
  - ☐ (ii) Containers or drums used for transfer remain fully closed until reaching the point of entry into process streams? And
  - ☐ (iii) Discharge points of chemicals into process streams enter at a point which will create the lowest possible risk of exposure to personnel?

GENERAL BEST PRACTICES
TRANSPORT

3.23 Is there a system to ensure that vehicle drivers:
- ☐ Are properly trained and licensed for operating the vehicles?
- ☐ Are competent to deal with accidents and emergency procedures and first aid treatment?
- ☐ Are trained and inducted for site specific off-loading procedures?
- ☐ Only leave their loads unattended when in secured areas away from members of the public?

3.24 Is there a system/procedure to ensure that:
- ☐ Packages that need to be segregated in accordance with applicable segregation requirements are not being packed together onto or in the containers/vehicles?
- ☐ Packages are externally inspected for damage, and only sound packages are loaded on the vehicles for transport off-site?
- ☐ Drums are stowed in an upright position, unless otherwise authorized by the competent authorities, and all goods are always properly loaded and, where necessary, adequately braced with securing material to suit the mode(s) of transport for the intended journeys?
- ☐ Goods loaded in bulk are evenly distributed within the container/vehicle?
- ☐ The containers/vehicles and packages are properly marked, labelled and placarded, as appropriate?
- ☐ MSDS, first aid procedures or other informational materials are carried in the vehicle in the native language of the driver?
- ☐ Transporters have inventory controls and/or chain of custody documentation to prevent loss of chemicals during shipment?

3.25 ☐ Is there a system/procedure in order to assure that transport routes are periodically re-evaluated by the company or its suppliers and distributors?

3.26 Are there any procedures implemented so that:
- ☐ Distribution is stopped when severe weather conditions exist?
- ☐ It is assured that transportation of solid chemical reagents is performed dry?

3.27 Regarding transport inside the company, is it assured that:

□ Safe routes are available for routing of delivery vehicles to the company's chemical off-loading area?

□ Suppliers' and distributors' drivers and operating staff are conversant with the prescribed routes?

□ The delivery routes are sign-posted?

□ Hazards are identified and appropriate warning signs displayed?

□ Minimum clearance heights are provided for?

□ Safe speed limits are established and delivery vehicle drivers comply with the speed limits?

□ Minimum turning circles are provided for?

□ The delivery roadways are hard-surfaced and wide enough?

□ The vehicle does not need to reverse?

GENERAL BEST PRACTICES

INHERENTLY SAFER PROCESSES

3.28 □ Is there a procedure requiring the company to consider the use of more inherently safe processes or design/engineering when new projects or modifications are being planned? Does this procedure include the principles of:

□ avoiding the use of hazardous chemicals, and substituting with those less hazardous?

□ reducing inventories of hazardous substances, both in process and in storage as much as possible?

□ selecting operating/handling conditions so as to minimise the risk (normally meaning reducing temperature and pressure)?

3.29 □ Is there a procedure to minimise the risk by providing barriers? Such as:

□ designing the system to withstand the worst possible accident without losing its integrity

□ using well-designed safety integrity systems to stop a dangerous event from occurring

□ installing second containments to catch accidental releases

□ using adequate safety distances to protect people from consequences

3.30 □ Is there a specific quantity of a dangerous (especially toxic, explosive, flammable, reactive) chemical product (in storage or process) that could potentially cause a major accident? Are there options to reduce that quantity:

□ by changes in procurement policy?

□ by storage in smaller units by combining?

□ by combining production and use on site?

□ by process intensification?

3.31 □ Is it possible to replace the most dangerous chemical(s) by a less dangerous material?

□ Could any hazardous raw materials or consumables be substituted for less hazardous materials?

□ Are suppliers providing more benign alternatives?

3.32 □ Are there alternatives for the most dangerous processes (e.g. can the process be substituted by another process that is less dangerous?)

3.33 Is it possible to:

□ Redesign the processes or the handling or transport of chemical materials to reduce the complexity and foster simplicity?

□ Change the process or the form of the chemical products so they are less harmful? (e.g. lower concentration or using pills instead of powders)

□ Can a (bio) catalyst help to process chemicals at lower temperatures and pressures, approaching ambient conditions?

3.34 ☐ Are there activities whereby chemical products are used in open air? Can these activities be changed so that the chemicals are contained?

3.35 ☐ Can the layout of the facility be changed so that transport of chemical products becomes simpler and less risky? (supply, transit, transport of products, removal of wastes)

3.36 ☐ Can hot spots of chemical hazards be removed to greater distances from buildings or other places were many people come?

GENERAL BEST PRACTICES
CLEANER PRODUCTION

3.37 ☐ Has the company identified the practices or activities that lead to losses during handling and weighing operations?

3.38 ☐ Is only the needed quantity of chemicals premixed? Are there procedures to ensure that the appropriate quantity and mixtures of chemicals are used in the production process?

3.39 ☐ Are there:
   ☐ observable drips, leaks or spills or emissions?
   ☐ estimates of the amount of energy, water or raw chemical materials being wasted?

3.40 ☐ Are wasted chemicals adding up to the volume of wastewater being treated?

3.41 ☐ Are wasted materials adding up to the quantities of wastes being sent off-site for treatment or disposal?

3.42 ☐ Are there any opportunities for reuse or recycling chemicals in the process?

3.43 ☐ Is it possible to reuse water from treatment plants in the process?

3.44 ☐ Can waste be reduced by maximizing dedication of process equipment and thus reduce equipment cleaning frequency?

3.45 ☐ Can any waste heat be used elsewhere?

3.46 ☐ Are there any procedures to effectively segregate by-product streams to improve internal and external reuse options and reduce the cost of disposal?

3.47 ☐ How much packaging waste is being generated due to bad housekeeping and accidental spillage and contamination of packages?

3.48 ☐ Is the state of general housekeeping affecting process flow or causing spills?

3.49 ☐ Are materials and chemical supplies being stored at the shop-floor in such a way as to minimise the risk of damage or waste?

3.50 ☐ Is it possible to reduce the quantities of chemicals being stored at the shop-floor?

3.51 ☐ Can preventive maintenance be used to optimise the efficiency of major equipment and ancillary systems (e.g. furnaces, boilers, etc.)?

GENERAL BEST PRACTICES
MAINTENANCE

3.52 ☐ Is there a system for preventive maintenance with regular measurements of the condition of equipment? Does it include, e.g.:
   ☐ tightness test of equipment and piping systems?
   ☐ visual inspection of equipment?
   ☐ lubrication and greasing of equipment?
   ☐ vibration measurement of rotating equipment?
   ☐ thickness measurement of vessels, tanks and piping (corrosion/erosion)?

3.53 ☐ Is there a system for testing of safety systems (interlock systems, overfilling protection, critical alarms, emergency shut-down, fire protection systems including such things as emergency power and water supply and sprinkling, safety showers, etc.)? Does it address, e.g.:
    ☐ documentation on control method, test interval, responsibility, etc.
    ☐ feedback to revise the need for testing depending on the results

3.54 ☐ Is there a procedure for identifying and logging needs for repair and control of equipment?

3.55 ☐ Is there a system for follow-up and documentation of maintenance work?
    ☐ Is this used for analysis of performance and reliability of the equipment?

3.56 ☐ Is there a procedure for checking that installations are maintained according to the specified engineering documentation, following all the mandatory requirements and additional internal requirements?

Chemical Safety Planning

3.57 ☐ Does the company integrate safety objectives in its planning process?

3.58 ☐ Is there a system for establishing goals and objectives on chemical safety?
    ☐ Are there goals/objectives established at different levels of the organisation?
        ☐ Do they follow a chain with departmental goals/objectives being part of the superior goals/objectives, etc.?
        ☐ Are they adjusted to be meaningful at each operational level?
    ☐ Is there a fixed procedure for establishing goals/objectives (e.g., with a formal approval body, at a specified time, etc.)?
    ☐ Are the goals/objectives in written form?
    ☐ Are both long-term and short-term goals used?
    ☐ Do employees participate in setting goals?
    ☐ Does the community participate in setting goals?

3.59 ☐ Is there an action plan associated with every goal/objective in order to ensure implementation and follow-up?

3.60 Does the plan:
    ☐ Prioritize risk reduction actions in order to address the most important issues as promptly and effectively as possible?
    ☐ Assign clear roles and responsibilities for implementing risk reduction actions?
    ☐ Are there timetables and resource allocations established and approved?
    ☐ Is the action plan in writing?

3.61 ☐ Are follow-up procedures in place?
    ☐ Is there a formal mechanism for this with a mandate for possible corrective actions?
    ☐ Is follow-up done at regular intervals?
    ☐ Is the progress monitored and is information provided to employees?

Assessing Training Needs and Training Plans

3.62 ☐ Is the general competence level of the employees adequate?

    ☐ Is the basic education of the employees adequate and consistent with industry standards?

    ☐ Are there regular checks of capacity, adequacy, etc. (including, e.g., alcohol/drug testing)?

    ☐ Is there a procedure for employees to remove themselves, or be removed from safety-related work, when temporarily unfit for work (as determined by a manager or by the employee) without fear of possible negative consequences?

    ☐ Are employees involved in resolving safety-related problems that affect their activities?

3.63 ☐ Do employees receive adequate safety-related information, and understand this information?

3.64 ☐ Do employees use/apply safety information (e.g., based an on independent review of day-to-day activities)?

3.65 ☐ Is there enough specialist competence related to safety?

    ☐ Is there an independent safety function and does it have the mandate, position, qualifications to exercise influence?

    ☐ Is there competence in all fields of safety (e.g., process safety, industrial hygiene, etc.)?

3.66 ☐ Is there an adequate recruitment procedure?

    ☐ Are adequate job requirement profiles established?

    ☐ Is there matching of the employees with the relevant profiles within the hiring process?

    ☐ Is there any checking on safety performance at hiring?

    ☐ Are there adequate controls to help ensure against hiring individuals who may be unable to carry out their tasks due to health concerns?

3.67 ☐ Is the manning of the operations of the company always adequate?

    ☐ Is it adequate during all periods of operation (including non-office hours)?

    ☐ Do decisions on manning take into account that excessive overtime, excess workloads, or stress that could impact safety?

    ☐ Is there a procedure to help ensure that the staffing is adequate during start-up, down-sizing, increasing workloads, and other periods of change?

3.68 ☐ Are there systems for appraisal and feedback to employees?

    ☐ Are there formal appraisal systems that include safety performance?

    ☐ Are there opportunities for employees to participate in safety planning and development sessions (with an "open" atmosphere) and is there a procedure for implementation and feedback from such sessions?

    ☐ Are there specific incentives for good safety performance?

3.69 ☐ Are there programmes for the development of the employees for job enrichment and for job rotation in order to keep the work force alert?

3.70 ☐ Are there procedures in place for dealing with non-compliance with safety-related procedures?

3.71 ☐ Are clear, specific objectives established for training and education?

    ☐ Can these objectives be measured?

    ☐ Are the training and education objectives well-known within the organisation?

    ☐ Is there evidence that the objectives have support from the highest level of the organisation?

    ☐ Are "rewards" available for positive performance (i.e., do employees' reviews recognise good safety performance)?

3.72 ☐ Are there training programmes for all categories of employees? Does this include:
- ☐ induction training of all employees?
- ☐ job training for workers (initial position and major changes or promotions)?
- ☐ job training/retraining for workers for normal enrichment of job?
- ☐ job training of supervisors and managers?
- ☐ specific safety training (e.g., fire fighting, emergency drills, first aid, etc.)?
- ☐ training of contractors?
- ☐ other categories appropriate to the circumstances of the company (including training of part-time and seasonal employees)?

3.73 ☐ Are there mechanisms to ensure that the scope, content, and quality of the training programmes are adequate?
- ☐ Are the programmes based on the competence requirements for each job category?
- ☐ Do programmes include topics for all skills needed for the job?
- ☐ Is there participation of the employees in developing the programmes?
- ☐ Is there a mechanism for feed-back from the employees built into the programmes?
- ☐ Is the quality of the training, trainers, and the training material assessed regularly?
- ☐ Is there formal checking of training results by an independent resource?
- ☐ Is there a review of training programmes following exercises of emergency plans and following incidents?
- ☐ Is there training in simulated operations (normal and abnormal, including emergency situations) e.g., on simulators or as table-top exercises?
- ☐ Is there training based on simulations of various types of abnormal and emergency situations (especially when installation has been running without disturbances for extended periods)?

3.74 ☐ Is there a mechanism to check that the training is actually performed according to the training programme, and achieves desired results? In this regard, are the following aspects checked and are records maintained concerning the following:
- ☐ scope (is each element addressed?)
- ☐ number of employees trained
- ☐ period of time between retraining activities
- ☐ individual results in terms of competence of the employee being trained

3.75 ☐ Do employees understand safety-related procedures?

3.76 ☐ Is there a training programme for outside parties who handle the company's products?

Emergency Planning – On-Site

3.77 ☐ Is there an adequate on-site emergency preparedness plan?
- ☐ Is it based on a thorough identification of possible accident scenarios, covering the whole range from small and likely to major and unlikely scenarios?
- ☐ Does it consider external hazards?
- ☐ Does it include an emergency organisation with clearly defined roles for all personnel involved, and with a clear hierarchy of responsibility?
- ☐ Does it include some preparedness for accidents outside the site with the products of the company?
- ☐ Are the internal resources of the emergency organisation adequate for carrying out its tasks, at any time of the day or the year?
- ☐ Is the system for calling in personnel adequate at all times?

3.78 ☐ Is there regular training and exercise of the on-site plan?
 ☐ Does it involve all the relevant forces in the community on a regular basis?
 ☐ Does it cover all employees (e.g., on all shifts) on a regular basis?

3.79 ☐ Are all employees, contractors, and other personnel at the site informed about the on-site plan, and trained for appropriate response actions?

3.80 ☐ Is there an internal emergency force for the immediate mitigation of emergencies?
 ☐ Is it adequately trained for its tasks?
 ☐ Does it have adequate (and regularly tested) equipment?

3.81 Is there an adequate system for alarming within the company in an emergency situation, including:
 ☐ alarming from the field to the response resources without delay?
 ☐ alerting all personnel within the company (e.g. by sounding alarms and/or visually by lights)?

3.82 Is there a system (and criteria) for external alarming of:
 ☐ external response resources?
 ☐ the community (the public in the vicinity of the company) when applicable?

3.83 Is there adequate provision for an emergency control centre within the company which includes:
 ☐ communications equipment, which will always be operable?
 ☐ relevant plans and drawings of systems on the site?
 ☐ call lists, personnel lists, etc.?
 ☐ an alternate centre in case the normal should become inoperable?

3.84 ☐ Are there well-marked and clear evacuation routes leading to defined assembly points for personnel in case of an evacuation?

3.85 ☐ Is there a counting and reporting system for reporting missing people, covering all people on the site at the time of an emergency?

3.86 ☐ Are there clear criteria in the emergency plan on when to trigger the off-site emergency plan? Has this been agreed upon with the authorities?

3.87 ☐ Is the responsibility for communication with external parties clarified (company spokesman)? Is the appointed person(s) trained for this purpose?

3.88 ☐ Is there a procedure for review and updating of the emergency plan?
 Does it address review and updating:
 ☐ on a regular basis?
 ☐ after training of the plan?

Emergency Planning – Off-Site

3.89 ☐ Is there a joint group (industry, community, and public authorities) for undertaking off-site planning?

3.90 ☐ Are the responsibilities for the company, the public authorities, and other stakeholders (including the public) in an emergency clarified in detail?

3.91 ☐ Is the off-site emergency plan based on possible risk scenarios identified in hazard identification and risk assessments and on other relevant considerations?

3.92 Has the company provided adequate information to public authorities (including, for example, response personnel, health/medical facilities, environmental authorities, etc.), and to other companies that may be affected in case of accidents including, e.g.:
 ☐ data on the chemicals being stored and used at site?
 ☐ information on volumes of chemicals as well as storage and process conditions?
 ☐ information on possible by-products and combustion products that could be formed in an emergency?

3.93 ☐ Are there regular visits from the public authorities to familiarise them with the installations?

3.94 ☐ Is there regular training of the on-site emergency plan with participation of external (public) resources?

3.95 ☐ Is there assistance in the setting up of on-site emergency plans for other companies that may be affected in case of accidents?

3.96 ☐ Are the combined resources from the company and the community adequate to deal with all the foreseeable scenarios?
 ☐ Is there a procedure for calling in assistance from other resources when needed?

3.97 ☐ Are there procedures for co-ordination/ co-operation in case of emergencies, on a local, regional and/or national level?
 ☐ Does it include the issue of possible domino effects, when relevant?

3.98 ☐ Do the procedures include sharing of equipment and personnel for mitigation?

3.99 ☐ Do the procedures address fixed installations and transport of hazardous substances?

4. Put the plan into practice, Train and Communicate

Best practices / standard operating procedures

4.1 Does the management system in the company include procedures, and is there an iterative process for continuous improvement, including:
 ☐ planning?
 ☐ implementation and operation with control and corrective actions?
 ☐ audit, management review, and feedback?

4.2 Are all the procedures in the system:
 ☐ clear in their requirement?
 ☐ well-documented?
 ☐ easily identifiable?
 ☐ easily obtainable and transmitted to employees?
 ☐ Are all operations, maintenance, laboratory, transport, and other activities needing procedures covered by such (normally written) procedures?
 ☐ Are both routine work and more infrequent or isolated cases covered?

4.3 ☐ Are all phases of operations covered, such as start-up, normal operations (including maintenance), shift change, shut-down, abnormal situations, emergency activities, security, transport, housekeeping; and other when relevant?
 ☐ Are all aspects covered such as equipment (including safety equipment) and personnel involved with processing, handling and storage of hazardous substances;
 ☐ Are risk assessments used as a basis for the procedures;
 ☐ Are safety instructions integrated in, or coordinated with, operating instructions.

4.4 ☐ Is there a mechanism to ensure that the procedures are designed and written in a user-friendly way, making compliance attractive and non-compliance unattractive?

4.5 ☐ Is participation of the employees built into the development of procedures?

4.6 Is there a formal system for work permits, addressing:
☐ hot work (welding, cutting, driving vehicles, etc.)?
☐ entry into confined spaces?
☐ hazardous work (e.g., opening of process systems, removal of pump, instrument jobs)?

4.7 Are there safety procedures for critical maintenance work, such as:
☐ lock-out of rotating equipment?
☐ tag-out of equipment?
☐ by-passing safety-critical alarms and interlocks (including authorization, records, limit on number of by-passed interlocks, etc.)?

4.8 ☐ Are there procedures addressing the management of change, which cover all the necessary steps from planning to implementation and follow-up?
Do the procedures address:
☐ approval by the relevant responsible person before proceeding to the next step?
☐ risk assessment, as appropriate?
☐ clear allocations of roles and responsibilities?
☐ a formal control form to steer and to keep track of the various steps in the procedure?

4.9 ☐ Are the procedures easily accessible for the users and other interested parties?

4.10 ☐ Is there a document control system for the procedures?

4.11 ☐ Is there a means to ensure that relevant information is passed on from one stage to another and incorporated in procedures when developing or introducing new products, processes or equipment?

4.12 ☐ Is there a means to ensure that procedures are being implemented?

4.13 ☐ Is there a means to ensure that procedures are corrected when conflicting with other procedures or if not working properly?

4.14 ☐ Is there a system to ensure that users are informed and have learned about changes in the procedures?

4.15 ☐ Is there a system in place for regular updating of the procedures?

Risk communication

4.16 ☐ Are there opportunities for employees to relate safety concerns, ideas and suggestions to those with authority to take action, on an anonymous basis if preferred?

4.17 ☐ Are there incentives for employees to provide input or suggestions related to safety issues?

4.18 ☐ Do employees participate in groups that develop and review safety policies and procedures, and address safety issues (e.g., in safety committees, works councils, management team)?

4.19 ☐ Is there a broad representation of managers and employees in regular meetings and working groups (project groups, safety rounds, risk analysis groups, safety audit teams) that address safety issues?

4.20 ☐ Is there a mechanism for ensuring that policy-making groups are informed of safety issues and concerns and is there a mechanism for providing feedback from these groups to employees and their representatives?

4.21 ☐ Is there a mechanism to ensure employees have access to all relevant safety-related information (material safety data sheets (MSDSs), safety instructions, etc.)?

4.22 ☐ Is there internal publicity for safety issues (for example on notice boards, newsletters, e-mail, targeted campaigns, incentive/award programmes)?

4.23 ☐ Is there a mechanism for external communication on safety issues and company performance?

4.24 ☐ Does this mechanism address all relevant stakeholders, including business-partners, communities, and authorities?

Product Risk Information and Product Stewardship

4.25 ☐ Is there a procedure for identification of all the relevant risks associated with the company's products?

4.26 ☐ Do all products containing hazardous substances have comprehensive material data safety sheets (MSDSs) and other information needed for safe handling, transport, and use of the products in all relevant languages?

4.27 ☐ Is there a mechanism to ensure that the relevant information reaches downstream handlers and users of the products? Including:
☐ distributors
☐ customers
☐ end-users
☐ transporters
☐ those responsible for disposal

4.28 ☐ Are records kept of the provision, and receipt, of information by all downstream users/handlers of products?

4.29 ☐ Is there a mechanism to check that downstream users/handlers of products containing hazardous substances have adequate facilities and know-how to safely and responsibly handle the products?

4.30 ☐ Is there a mechanism to provide training for downstream users/handlers?

4.31 ☐ Is there a mechanism for responding to inquiries from downstream users/handlers?

4.32 ☐ If downstream users/handlers are found not to be capable, is there a mechanism to resolve concerns or to refuse to sell or provide the products?

4.33 ☐ Is the packaging for any products containing hazardous substances designed in such a way that the products can be handled in a safe and environmentally sound way?

4.34 Is there active assistance to other companies related to:
☐ accident prevention?
☐ emergency preparedness?
☐ emergency response to accidents involving hazardous substances?

4.35 ☐ Is there a system for reporting, receiving, and distributing incident case histories?

4.36 ☐ Is the company prepared to assist with expertise in case of accidents with its products during transport or during handling/use by customers or other downstream handlers/users?

Procurement practices

4.37 ☐ Are hazardous chemicals only purchased from dependable, reputable manufacturers, suppliers and distributors who assure the health and safety of their employees, and operate in such a way as to prevent accidents that may affect the public and the environment?

4.38 ☐ Are hazardous chemicals procured through an appropriately structured procurement contract that will ensure that risks associated with the distribution, transportation and off-loading of hazardous chemicals are effectively controlled and managed?

4.39 ☐ Is there a system in place to ensure that product delivery documentation correctly identifies the hazardous chemicals being carried in order to ensure that proper response action can be taken in cases of vehicle accidents and that proper off-loading, placement and storage at final destination can occur?

4.40 ☐ Are guarantees requested from suppliers and/or distributors, so that packaging and transport containers comply with specifications under national legislation on road transport of dangerous goods, and that containers are leak free and watertight, to prevent spillage into the environment and public domain?

4.41 ☐ Are there established any off-loading agreements specifying the requirements needed to ensure the safe transfer of hazardous chemicals from the supplier delivery vehicle into the storage facility?

4.42 ☐ Is there a system/procedure ensuring that effective communication systems and procedures need to be in place to allow for changes to agreed delivery schedules?

4.43 ☐ Do procurement contracts include the supply of risk assessments of routes to be used for delivery of the hazardous chemicals by supplier and distributors?

5. Evaluate how well you did

5.1 ☐ Is there a system in place to monitor performance on safety objectives and on the implementation of risk reduction actions?

5.2 ☐ Is there a system in place for monitoring and measuring the effectiveness of the safety management procedures/systems focusing on organisational and administrative matters? Does it include:
☐ a defined scope of contents
☐ an unambiguous tool for measuring performance
☐ a fixed schedule for regular auditing
☐ inclusion of all units/departments
☐ written reports
☐ follow-up of action items
☐ broad competence participation in the audit team
☐ adequate coverage of persons interviewed at all levels
☐ adequate coverage of documents
☐ adequate check at installations

5.3 ☐ Is there a system in place for external (independent) auditing of the safety management procedures/systems (focusing on organisational and administrative matters), including the same aspects as above?

5.4 Is there a system for regular review and follow-up by the management of all the auditing and technical reviews including:
☐ penetration of reports (internal, external/audits, technical reports)
☐ own spot checks
☐ formal reports (open for all stakeholders) with statements
☐ setting new objectives
☐ reviews of policies and procedures

5.5 □ Is there a systematic appraisal or inspection of procedures and/or systems to determine compliance with applicable standards and legislation?

5.6 □ Is there a procedure to communicate the results of audits, inspections, and similar activities to employees?

5.7 □ Is there involvement by the members of the public in appropriate aspects of the audits?