

**Environmental Accidents
Emergency Response Guide I**

PREPAREDNESS and RESPONSE

SUMMARY



**RIVER SHIELD 5D189
INTERREG III B CADSES**



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1 PREFACE

This Emergency Response Guide to environmental accidents was compiled in the framework of the “River-Shield” project, which is co-financed by the INTERREG IIIB CADSES program under the reference number 5D189.

The project’s objective is the protection of rivers from accidental industrial pollution. It is implemented in cooperation of environmental associated bodies from Greece, Hungary, Poland, Czech Republic, Slovenia and Bulgaria.

River-Shield is consisted of experience exchange, know how transfer and dissemination activities. During this process outputs like: good practice guides, and conclusion reports are created. The main project activities and deliverables are presented at the www.rivershield.org web page.

Three emergency response guides for accidental industrial pollution that threatens mainly river areas were created. The first one is about emergency Preparedness and Response, the second about special Pollution Control Techniques and the third about Operational Support.

These Emergency Response Guides mostly provide general guidelines to public services and security forces that are involved in the response to major environmental accidents. They were compiled under the supervision of the Greek partners. Therefore the conditions presented correspond better to the Greek emergency response status. However conditions in the other EU states are not that different.

Whatever is mentioned in the guides and in general at all the project deliverables and activities represent the views of the River-Shield partners and not in any way of the European Commission, which simply co-finances the project through the INTERREG IIIB CADSES program initiative.

Dangerous substances are either in gas, liquid or solid form. They might be toxic, hazardous, radioactive or flammable. They are transferred in containers, barrels, pipelines, vehicles, ships and trains. They are either produced or used in the production of other substances. This variety leads to a wide range of possible environmental accidents.

Industrial accidents are often the results of errors at the design or at the construction or at the operation or at the maintenance of the dangerous substances' installations. In rare cases they are caused by natural disasters like earthquakes, storms, thunders, hurricanes, floods, etc. Sometimes they are not accidental but they are the result of deliberate actions. They may occur during the use of the dangerous substances at the industrial sites or during their transportation from one place to another.

Industrial accidents may have limited or severe consequences that lead to deaths, injuries, environmental disasters and destructions of properties and infrastructures. In almost every case accidents are due to human errors. Even in the case of natural disasters, accidents can be prevented and their consequences if they occur minimised.

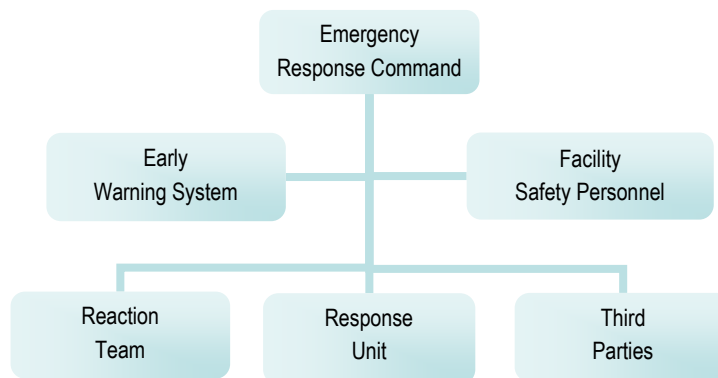
Today both knowledge and technical capacity exist to minimise accidents or their consequences. Prevention is always better than cure. Therefore appropriate measures should be taken to prevent accidents and minimise their consequences. No reductions should be made to the construction or to the operation of the dangerous substances' facilities. The implementation of the "POLLUTER PAYS" principle of the EU environmental policy can contribute to this purpose.

3 RESPONSE STRUCTURE

Efficient response to major industrial accidents requires the mobilization and coordination of different services and the use of specialized techniques and equipment. In emergency situations everything should be done quickly and correctly. It is obvious that all involved parties should know exactly how to react when the emergency occurs.

The emergency response structure presented below is indicative. It has been simplified to correspond better to the emergency response situation in the Greek participating regions. However it is in line with world good practice and it can be easily modified to serve other regions and countries.

Response Structure Chart



The main duties of the core bodies involved in emergency response are mentioned below.

- Emergency Response Command is consisted of head representatives of the bodies directly involved in emergency response, like the fire brigade, the police, first aid service, etc. The head of the emergency response command is the Coordinator of the entire response and pollution control operation. When the Command Centre is informed of a potential accident it notifies the coordinator who sends the Reaction Team to verify the

incident. After receiving information from the Reaction Team, he decides on the level of mobilization and coordinates the response operation.

- The Safety Personnel of the industrial facility deals with small industrial accidents with its own means. However in significant accidents that exceed the borders of the facility it notifies the competent public services and asks for their contribution. It tries to confine the incident and secure the health of its staff and nearby people. It informs the Reaction Team and cooperates with the Response Unit.
- When an Early Warning System exists and receives signs of industrial pollution, the system's status is checked firstly and then the validity of data is examined. If both of them look correct, the Emergency Response Command Centre is notified. The Reaction Team is sent to verify the incident and report to the Command Centre.
- The Reaction Team acquires the appropriate equipment and personnel to go over at the site of the probable industrial accident, verify the incident, collect relevant information and report to the Emergency Response Command Centre. It follows the orders of the Emergency Response Coordinator and cooperates with the Response Unit.
- The Response Unit is consisted of specialized personnel with specific means to stop the expansion of the pollution and in some cases collect the pollutants. In some countries this is the work of the fire department, while in others different further specialized services exist. After the verification of the incident they receive orders and information from the Command Centre to go over to the site of the accident. When they arrive they get informed by the Response Team and the Safety Personnel of the facility. They create the response plan; check the current conditions and accordingly they decide upon implementing the response plan or wait. If they need the help of more or other services they inform the Command Centre accordingly.
- Various Third Parties are involved in the response to industrial accidents despite the Response Unit. The Police makes traffic interventions and supervises the evacuation of the disaster areas. The first aid services look after injured people and transport them to competent nearby medical

facilities. The Armed Forces and the Coast Guard contribute with their means and personnel whenever needed. Specialised private companies or experts may be requested to deal with the problem. The contribution of volunteers is sometimes very useful. These are some of the bodies that may contribute to the response to an industrial accident. In any case their actions are supervised by the Emergency Response Coordinator.

The planning of the response operation is made by the bodies directly involved in the process under the supervision of the Emergency Response Coordinator. The data from special Emergency Response Plans for Major Industrial Accidents are vital to this action. Emergency response planning priorities are:

- Safeguard of human health and life
- Protection of the environment
- Minimization of economic losses

4 INCIDENT VERIFICATION

The Emergency Response Command Centre can be informed about a probable environmental accident through various channels:

- From the Early Warning System which uses remote sensors and sends its alarms to the Command Centre.
- From members of the Emergency Response Structure that inspect industrial units or the river area.
- From the company or the site where the accident took place by an involved party or by a third person that happened to be in the area.

Except in the second case when the information comes from members of the Response Structure, in both the other occasions the incident has to be verified and evaluated before the Response Structure is mobilised in order to exclude probable false alarms.

When the measurements of the Early Warning System show a probable environmental accident, the condition of the system should be checked and the values of the monitoring indicators should be assessed in order to decide if they are reasonable and realistic. If the system is malfunctioning it should be repaired. In every case that the extrapolation of a safe and complete conclusion is difficult, the Reaction Team should go over to the site of the potential accident and check the incident.

When the information is from a person outside of the Emergency Response Structure, the receiver of the warning should try to collect data about the incident or the company that can be verified from information already existing at the Command Centre. Furthermore the informer should be asked to remain at the place of the accident and to provide his name and telephone number. If the information seems valid, the Reaction Team should be sent at the site and evaluate the probable incident.

If the incident cannot be verified visually, special equipment should be used. When the incident is not verified and it is considered as a false alarm, then in

the case of the Early Warning System measures should be taken to improve or repair the system and reduce the probability of repetition. Respective actions should be recorded.

When somebody is deliberately misleading the authorities, then the Emergency Response Coordinator decides on which measures to take in cooperation with the Police and the legal services. If the false information is given by mistake, members of the Reaction Team try to teach the informer how to identify correctly environmental accidents. All these activities should be also recorded at the Command Centre files.

In all the cases that the incident is verified the Reaction Team arrives at the site collects critical information about the incident and notifies the Command Centre. This information includes the type and the volume of the pollutant, the actual place of the accident, current weather conditions, rate of expansion and geographical characteristics of the area.

The Command Centre receives and evaluates respective information and mobilises the Response Structure accordingly. The Response Team is sent to the site with appropriate personnel and equipment.

5 INCIDENT EVALUATION

The rational utilisation of the available emergency response resources requires the significance evaluation of the incident. Industrial accidents are usually categorised in three levels.

Level-1 incidents are of minor scale, confined at the facility premises, with limited expansion potential and can be dealt solely by the company's personnel and resources without external assistance. These incidents might occur during the normal operation of the facilities and they include small liquid spills and gas releases.

Level-2 incidents are of significant importance, surpass the borders of the facilities and threaten the environment and nearby populations, the expansion potential is significant and the situation cannot be controlled by the company's personnel and resources. These incidents take place in abnormal circumstances and they include equipment failures, gas or liquid leaks and small fires.

Level-3 incidents are of major importance, threaten extensive areas and populations, probable consequences are severe, the expansion potential is great and the control of the situation requires the full mobilization of the Emergency Response Structure. These incidents include the accidental releases of big quantities of dangerous substances and extensive fires of the industrial facilities.

The decision of categorising incidents between levels 1 and 2 is taken usually by the safety or the facility manager of the dangerous substances enterprise. As soon as an incident is evaluated as level-2, the Emergency Response Structure should be notified. In general fires in dangerous substances installations should be considered at least as level-2 incidents.

The decision of categorising incidents between levels 2 and 3 is taken by the local Emergency Response Coordinator. In these circumstances the Coordinator calls all the bodies he thinks necessary to participate at the

planning of the response operation. Firstly the proper response techniques are chosen and the appropriate resources are determined. Additional support from central services is called if necessary. In rare cases support is asked even by nearby states in order to confine and control the incident.

The main parameters that should be considered in incident evaluation are: the characteristics of the dangerous substance, the release volume, the rate of expansion, the probability of/or occurrence of fire, the proximity to nearby populations or to sensitive environmental areas, the current weather conditions and the ability to confine and control the incident.

The response begins with level-1 activities and moves to higher levels according to the development of the incident. In this way the rational and efficient mobilization of the Response Structure is achieved.

According to the "SEVESO II" EC directive, facilities that produce, store or use dangerous substances above certain thresholds are obligated to have and implement specific safety studies, safety management procedures and emergency response plans. Additionally they should acquire trained personnel and appropriate means to deal with level-1 incidents.

In order to control level-2 and 3 incidents they should cooperate with the public services that form the Emergency Response Structure and with external not public organizations and companies. The only way to achieve efficient emergency response is through specialized training and execution of common training exercises with all the involved parties.

6 FIRST RESPONSE

The First Response to an emergency situation concerns the actions that should be implemented right after the identification and verification of the incident. They include the notification of the appropriate bodies and the first measures for the confinement and control of the incident.

The Response Team goes over to the site of the accident and seals the area. It collects further information and informs the Command Center in order to safely evaluate the incident.

Representatives of the local authorities are informed and the inhabitants of the area are given instructions on how to react. The Emergency Response Coordinator in cooperation with all the bodies he judges necessary proceeds in the planning of the response operation. Appropriate personnel and means are determined and sent for.

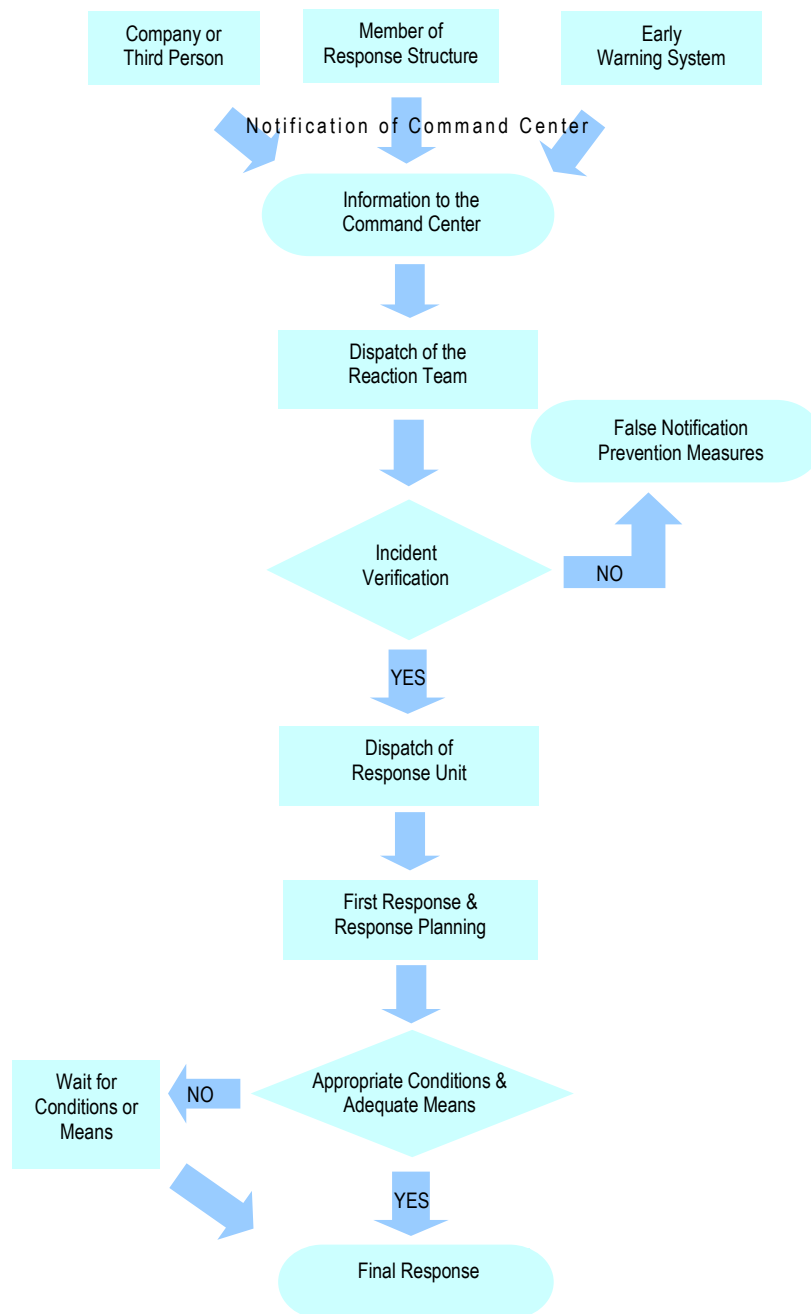
The type of the dangerous substance, the current weather conditions and the status of the accident are taken into account in order to decide if it is safe to begin the pollution control operation.

These activities aim to the confinement of the incident, while the next to the collection of the pollutant or the putting out of the fire. First the incident should be controlled and then its consequences minimized. The remediation activities follow.

Efficient emergency response requires that all involved parties will act quickly and correctly. Therefore each party should know exactly what to do. The Reaction Team and the Response Unit have discrete actions to perform in an accident situation. All participating bodies follow the instructions of the Emergency Response Coordinator. If the appropriate infrastructure exists or can be created nearby the site of the accident the Command Center is moved there. Supportive actions to the response are performed by the Police, the Public Health services, the armed forces and other external bodies.

A summary chart of the emergency response measures follows.

Emergency Response Steps



7 CRISIS COMMUNICATION

Appropriate communication in a crisis situation can save lives and avoid further dangerous circumstances. The lack of information leads to fear and fear leads to panic which is the biggest danger in a crisis situation.

Sometimes instinctive reactions are wrong. When for example toxic gases are released in the atmosphere, it is better to stay inside sealed buildings than to go out and try to run away from the area.

Therefore members of the Response Structure should be trained in Crisis Communication and undertake this duty when the incident occurs. These persons should have good oral speaking competence, the ability to control their feelings, be intelligent, flexible and diplomatic. One of them should be appointed responsible for the communications during the crisis.

He should inform the local authorities, the inhabitants of the area and the mass media, about the incident and the developments in such a way to avoid panic. The provided information should be valid and clear, therefore it should be approved by the Emergency Response Coordinator.

The provision of information is always necessary. When more examination is required this should be declared. Information provision should be made in a way that shows compassion, concern, sincerity, ability, knowledge, determination and effort. The objective is to build trust with concerned parties.

The most important moment at a crisis situation is usually just after the accident has taken place. In a small amount of time many different people that either work, live or pass through the area, should be informed correctly.

The following issues should be taken into account in crisis communication planning:

- Mass Media have great abilities but most people do not use them all the time, especially when they are at work or when they are asleep. Therefore they should be used complementally with other means.

- Sirens and Speakers are the most usual way of notifying people in an emergency situation. In some cases they are in bad condition, or they are not available or adequate to cover extensive areas. Therefore in most cases they are used in parallel with radio messages in order to provide quick and complete information.
- Ordinary and Mobile Phones present many advantages but there are still some problems to be solved. Until now no network offers the ability of simultaneous mass calling. Mass SMS submission is a measure under consideration which has not yet been extensively tested. Therefore the use of telephones for massive communications is advised in difficult circumstances when the other means cannot be used.

Furthermore there are some cases that present more difficulties in crisis communication. The people travelling through the disaster area are not aware of the danger that threatens them. They can be warned with illuminated signs, radio messages or by the police. The warning during the night when people are asleep can be done door to door by security forces or by the use of sirens and speakers. People with disabilities like old, deaf and paralysed and people that do not understand the native language are difficult to be informed and the Public Services should specially care for them if their neighbors do not.

The provision of information before the accident occurs is very useful. In that case people know how to react when the emergency happens. Appropriate training programs can use leaflets, TV and radio messages. They should be repeated frequently every three to five years. Relevant training and exercises should be elaborated in constant bases in schools and public services and in general in all places with a lot of people.

Finally some conclusions from the relevant manual of the German Ministry of Environment are presented:

- Inadequate information is dangerous. It is better to give more than less.
- One time is never enough. Emergency training should be repeated.
- Theory is not enough. The elaboration of training exercises is necessary.
- Problems should be presented as they are. Sincerity builds trust.



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