UNEP

UNITED NATIONS OFFICE FOR THE COORDINATION OF HUMANITARIAN AFFAIRS

UNITED NATIONS ENVIRONMENT PROGRAMME

JOINT UNEP/OCHA ENVIRONMENT UNIT

"Guidelines for Environmental Assessment Following Chemical Emergencies"

Prepared by Joseph A. Bishop,
Consultant to the Joint U NEP/OCHA Environment Unit

Contents

1. INTRODUCTION

1.1 This document is designed firstly as a set of practical guidelines (hitherto referred to as the Guidelines) that can be used as an emergency assessment tool to enable competent national authorities and/or international experts to gather the necessary data on-site, for onwards transmission to the Joint UNEP/OCHA Environment Unit. Secondly, this data will assist the Unit in disseminating the information amongst the international community and if necessary, identifying the exact type of international assistance required.

1.2 For the purpose of the Guidelines a Chemical Emergency can be described as "an occurrence (such as a major emission, fire or explosion) resulting from an uncontrolled development in the course of an industrial activity (e.g. transport, warehouse, waste, storage, transfer and process) leading to serious danger to persons and/or the natural or man-made environment, whether immediate or delayed and involving one or more dangerous substances".

1.3 The possible immediate environmental consequences of a Chemical Emergency include:

- the release into the atmosphere of toxic or corrosive gases, aerosols or particulate materials which could ultimately harm the aerial, terrestrial or aquatic environments.
- the release of liquids or solids which could adversely affect land or water courses and the flora and fauna therein.
- fire or explosions causing damage to buildings or natural environment.

1.4 The effects of environmental impact can be direct or indirect, immediate or delayed, temporary or persistent. The persistent effects are of particular importance, such as damage caused to habitats by fire or by non-persistent (short lived and biodegradable) chemicals is acute, regeneration may start immediately. However, although abundant, resistant or adaptable species may be able to recolonise damaged areas relatively quickly, habitats supporting rare species may take a long time to return to their original state.

1.5 Persistent, non-biodegradable substances released into the environment may be transported widely through the ecosystem and accumulate in the tissues of particular plants and animals, becoming concentrated in animals near the top of the food chain and possibly exerting toxic effects on them. Some accidents may result in the balance of the ecosystem being significantly disturbed, allowing certain species to flourish at the expense of others, thereby causing a fundamental and permanent change in the nature of the ecosystem. Environmental impact can also put people at risk, through the consumption of contaminated food or water.

2. ASSESSMENT PROTOCOL

2.1 ASSESSMENT PURPOSE

An alert to a chemical emergency with environmental consequences may originate from a wide range of sources, some of which may not always be reliable. It is therefore of paramount importance that at the earliest possible time contact is established with the competent national authorities through the National Focal Point (NFP), with the purpose of:

- confirming that a chemical emergency has originated.
- estimating the actual or potential environmental impact.
- assessing the local response capacity
- identifying any international assistance required

2.2 ASSESSMENT CRITERIA

A chemical emergency is considered to be environmentally threatening if it causes permanent or long term damage to particular unique, rare or otherwise valued components of the man-made or natural environment, or if there is widespread environmental loss or damage.

When considering environmental impact we need to examine the environmental elements or compartments affected such as:

- Air
- Water
- Soil
- Plants
- Animals

Chemical emergencies can contaminate one or several of these compartments in the following manner:

2.2.1 Compartment Air

Contamination - Air contamination occurs when a volatile chemical or airborne particle (dust) containing a chemical gets into the air as a result of a spill, evaporation, or any release.

Spread - Chemicals can be move throughout air, by air movement or precipitation, or can move as fallout with precipitation or with particle matter to contaminate other environmental compartments.

Exposure - Airborne chemicals could result in chemical exposures of all environmental compartments.

2.2.2 Compartment Water

Contamination - Water contamination occurs by fallout from air, from spills, from substances directly applied or intentionally introduced, with runoffs, or from leaching into water.

Spread - Spread may occur with volatilization, water movement, evaporation or

irrigation with well water.

Exposure - Chemicals in this compartment could result in the chemical exposure of all environmental compartments.

2.2.3 Compartment Soil

Contamination - Soil contamination occurs by spills, fallouts from air, or substances directly or indirectly applied, or introduced into or on the soils.

Spread - Spread may occur through volatilization, runoffs, leaching or plant and animal uptake resulting in food-chain contamination.

Exposure - Soil contamination could result in the chemical exposure of all environmental compartments.

2.2.4 Compartment Plant

Contamination - Plant contamination may result from fallout, spills, substances indirectly or directly applied to soils, irrigation and materials in manure and in compost.

Spread - Spread may occur by release into the air, into the soil via the root system, into the air if the plant is burned, or into the food chain if the plant is eaten.

Exposure - Plant contamination could result in the chemical exposure of all environmental compartments.

2.2.5 Compartment Animal

Contamination - Animal contamination may occur by fallout, substances directly or indirectly applied to or on animals, eating other plants or animals, drinking water, inhalation and absorption.

Spread - Respiration, excretion, eating the animal.

Exposure - Animal contamination could result in the chemical exposure of all environmental compartments.

For chemical accidents affecting the natural environment, the time likely to be taken for unassisted recovery to a state close to the original is an important factor. It will depend on the type,

susceptibility, diversity, abundance, colonising ability and population process of the species involved. **"A state close to the original"** in this context denotes not only that particular species of plant or animal have returned, but that their respective age/size distributions and community structures are more or less as they were prior to the emergency. A projected period longer than 15 years for terrestrial habitats and about 5 years for aquatic habitats can be taken to represent **"long term damage"**, although lesser timescales are sometimes appropriate.

3. PREPAREDNESS FOR ASSESSMENT

3.1 ORGANIZATIONAL PREPAREDNESS

Much will be gained by having systems and procedures in place and documented in advance of a Chemical Emergencies to allow for the collection, analysis and transmission of data in an efficient and timely fashion. Officials responsible in-country for Chemical Emergencies should consider the following:

3.1.1 The Environmental Assessment Following Chemical Emergencies should be an integral part of the contingency plans prepared by the competent national authorities.

3.1.2 The Guidelines and Checklist should be distributed to key personnel, competent national authorities, National Focal Point and local officials (identified in advance) with Chemical Accident Management responsibilities.

3.1.3 Personnel identified to use the Guidelines and Checklist should receive appropriate training in its use, rehearsing assessment, checklist completion and onwards transmission to National Focal Point via the competent national authorities

3.1.4 An established procedure should exist for rapid communication between competent national authorities and the National Focal Point, so as not to delay the assessment reporting procedure.

4. CONDUCTING THE ASSESSMENT

4.1 CONFIRMING THE CHEMICAL EMERGENCY

It is of vital importance to identify as soon as possible that a Chemical Emergency has actually occurred. During the initial stages of the emergency their will be unclear and conflicting reports, therefore, personnel conducting the assessment should secure reliable sources of information to allow an objective assessment to be carried out which will decide if a Chemical Emergency does exist. These sources will include:

- Ministry for the Environment
- Ministry of Interior
- Ministry of Agriculture
- Water Authorities
- River Authorities
- Health Authorities

and Fisheries

- The Emergency Services (Police, Fire & Rescue, Medical)
- Atmospheric Environment Services
- The Chemical Industry
- Civil Protection
- The local population
- Public Works
- The Media
- Environmentalist Groups

The assessment will include on-site visits to the affected area and personnel are warned not to jeopardise their safety by taking unnecessary risks or entering contaminated areas.

4.2 ESTIMATING THE ACTUAL OR POTENTIAL ENVIRONMENTAL IMPACT

Once the Chemical Emergency has been confirmed the next step is deciding if there is an actual or potential environmental impact. Governments will have existing classification systems useful for identifying those environmental elements or compartments which have relatively high value and which should be taken into account when considering environmental impact. In the absence of such a classification system, the following examples can be used as guidelines for accidents affecting or likely to affect any of the following environmental elements or compartments and which would constitute a major environmental impact:

4.2.1 Freshwater and Estuaries

Effects on any ***significant part*** of any stream, river, canal, reservoir, lake, pond or estuary which when assessed have a lower water quality of one class for one month or lower biological quality by one class for more than one year, or cause long term damage to the habitat overall.

A ***"significant part"*** of a river, canal or stream can be taken as a 10 km stretch. For a lake or pond an area of 1 hectare is considered significant and 2 hectares for an estuary.

Long term damage to a water system is considered to have been effected when natural recovery of the system to a state close to that prior to the accident could not occur within 5 years, taking into account all the species depending upon or utilizing the water resource.

4.2.2 Aquifiers and Groundwater

Damage to an aquifier leading to contamination which would preclude its use for domestic

or agricultural water supply, or have significant adverse impact on the surface waters and biotic systems it supports.

Effects of pollution on an aquifier can take many years to become apparent and recovery time may be very prolonged. Contamination by persistent substances and especially substances belonging to *List I or List II of the EC Groundwater Directive** would be of particular concern.

4.2.3 Marine Environment

Permanent or long term damage to an area of approx 2 hectares or more of the littoral or sub-littoral zone or the benthic community adjacent to the coast or of any fish spawning ground or:

- to an area of approx 250 hectares or more (approx 1 nautical mile) of the benthic community of the open sea or;
- a casualty count of approx 100 sea birds (excluding the common species of gulls) or;
- a casualty count of 500 sea birds of any species or;
- 5 sea mammals of any species found dead or unable to reproduce as a result of the accident.

*** List I and List II of the EC Groundwater Directive can be used as a consultative document for contamination by persistent substances.**

Although dilution may subsequently reduce the concentration of a released substance to levels difficult to measure and monitor, initial concentrations may be sufficiently high to damage sublittoral, littoral and inshore organisms. Furthermore, low concentrations of substances may still pose a hazard if they are highly toxic or if they are persistent and bioaccumulate.

It is important to remember that the number of animal casualties detected following an accident will depend on local circumstances, such as geological location, season and whether the incident occurred near a breeding colony. The number of animals killed in an accident will almost certain be considerably more than the number of casualties detected.

4.2.4 Particular Species

Death or the inability to reproduce in a significant percentage of the known or estimated local population of a particular species, whether caused directly or indirectly by the accident.

The loss or inability to reproduce of 1% of any species would be considered significant. In many cases, for example with specially protected or high value species, the threshold may be lower. It will usually be necessary to estimate the number of animals killed, by judging from the number of casualties found.

Direct effects on a species could occur, for example, by burning or acute poisoning. Indirect

effect may result from the destruction of a particular habitat or breeding area or through the consumption of contaminated water or food species. Predatory species might be in particular danger through the consumption of directly poisoned animals or through he effects of persistent chemicals which bioconcentrate in species at or near the top of the food chain.

When reporting on the degree of threat to a species' overall population the category assigned by the World Conservation Union (IUCN) can be used as guidance and reference made to the European Red List of Globally Threatened Animals and Plants. This list classifies six categories as follows:

EX : Extinct
Species which are no longer known to exist in the wild after repeated searches of the type localities and other known or likely places.

E : Endangered
Species in danger of extinction and whose survival is unlikely if the causal factors continue operating.

V : Vulnerable
Species believed likely to move into the "endangered" category in the near future if the causal factors continue operating.

R : Rare
Species with small world populations that are not at present "endangered" or "vulnerable" but are at risk.

I : Indeterminate
Species known to be "endangered", "vulnerable" or "rare" but where there is not enough information to indicate which of the three categories is appropiate.

K : Insufficiently Known
Species that are suspected but not definitely known to belong to any one of the above categories because of lack of information.

4.2.5 Release of Persistent Toxic Substances

Release into the environment of 10% or more of the "top-tier"* threshold quantity of a persistent dangerous substance is considered to be a major accident.

A substance can be classified as having the potential to cause long term adverse effects in the environment if it is not readily biodegradable or the log Pow (log actanol/water partitioning coefficient) is greater than or equal to 3.0, unless the experimentally determined BCF bioconcentration factor is less than or equal to 100.

Substances are considered to be readily degradable if the following apply:

(i) If in 28 day Biodegradation Studies the following levels of degradation are achieved:

- in tests based upon dissolved organic carbon: 70%
- in tests based upon oxygen depletion or carbon dioxide generation: 60% of the theoretical maximum.

This levels of biodegradation must be achieved within 10 days of the start of degradation, which point is taken as the time when 10% of the substance has been degraded.

(ii) If in those cases where only COD and BOD5 data are available when the ratio BOD5/COD is greater than or equal to 0.5.

(iii) If other convincing scientific evidence is available to demonstrate that the substance can be degraded (biotically and/or abiotically) in the aquatic environment to a level of 70% within a 28 day period.

*** Threshold Quantities of Dangerous Substances for top-tier sites are listed in the schedules to Council Directive 82/501/EEC and can be used as guidance.**

4.2.6 Crops, Domestic Animals, Other Foodstuffs and Public Access

Contamination of 10 hectares or more of land which, for one year or more, prevents the growing of crops or the grazing of domestic animals or renders the area inaccessible to the public because of possible skin contact with dangerous substances, or contamination of a significant area of any aquatic habitat which prevents fishing or aquaculture or which similarly renders it inaccessible to the public.

Land crop and other plants may be contaminated with dangerous substances by direct spillage, aerial deposition, by irrigation with contaminated water, or by the absorbtion of contaminated substance from the soil. Persistent chemicals can bioaccumulate and this may result in the contamination of meat or milk from cattle grazing on contaminated pasture. Game bird and animals may be similarly affected. Fish and other aquatic animals or plants used for food may be rendered unfit for human consumption if dangerous substances enter aquatic habitats.

4.2.7 Water Sources and Supplies

Contamination of a water supply (either directly or indirectly via the source) such that the supply to 10,000 or more consumers has to be interrupted, because this has been rendered unfit for human consumption, or the water treatment works and/or distribution system has been damaged or contaminated, in circumstances where an alternative uncontaminated supply is not available.

4.2.8 Sewage and Sewage Treatment

Direct or indirect damage to a sewage system or sewage treatment works which results in a significant risk to public health by the pollution of a water source supplying 10,000 persons

or more, or damage to a major sewage system which results in widespread hazard to public health and safety through flooding.

4.2.9 Nature Reserves, National Parks, Sites of Special Interest, Areas of Outstanding Natural Beauty and Listed Landscape

Permanent or long term damage to a national reserve, site of special interest (including marine nature reserves), areas of outstanding natural beauty and listed landscape resulting in loss of nature conservation value in:

- more than 10% or 0.5 hectares (whichever is the lesser) of the area of the site, or
- more than 10% of the area of a particular habitat, or
- more than 10% of a particular species associated with the site

4.2.10 Ancient Monuments, Heritage Buildings and Areas of Archaeological Importance

Damage to an ancient monument, heritage building or an area of archaeological importance, such that it no longer possesses its architectural, historic or archaeological importance and which would result in loss of prominence if no remedial or restorative work was undertaken.

5. Assessing Local Response Capacity and Immediate Needs

The competent national authorities are the best placed agencies to gauge the level and type of assistance required, based on the type of accident and in-country capacity to respond. In the main, requests for assistance result from:

(i) No expertise available in-country to assist.

(ii) A large chemical emergency beyond the affected country's response capacity.

(iii) The affected country wishing to invite expertise to provide independent advise

When requesting outside assistance the competent national authorities must be as specific as possible, to allow the Unit to identify suitable responder(s) with the minimum of delay. The request for assistance should be focused on bridging the gap between the expertise/equipment which are already available in-country and that which is required to bring the emergency to a satisfactory conclusion.

Once the Unit has identified a suitable responder the logistical arrangements (arrival points, transportation, deployment in-country etc) can be agreed on a bi-lateral basis between responder and competent national authorities, with the Unit overseeing the operation and assisting in whatever capacity.

Time permitting, the request for assistance should identify priority and long term needs to expedite the delivery of assistance. These should include measures required for:

(i) Protecting the population at risk.

(ii) Containing and preventing propagation of the emergency.

(iii) Pollution control.

(iv) Decontamination and clean-up.

(v) Restoration of economic activity and a progressive return to normal routine.

6. Notification Procedure

In large chemical emergencies whether international assistance is likely to be required or not, the NFP should in the first instance immediately alert the Unit. This alert can be done by facsimile or telephone briefly stating that there has been a large scale chemical emergency and additional information will follow. He/she should also mention that an assessment is being conducted and the "Questionnaire" will be forwarded as soon as possible. This will enable the Unit to monitor the emergency and be on stand-by to receive the "Questionnaire".

The facsimile transmission requesting assistance should include:

(i) Facsimile cover sheet. (Appendix I)

(ii) Questionnaire cover sheet, appropriately ticked (Appendix II)

(iii) Questionnaire sections 1 to 10 completed

(iv) Questionnaire relevant sections (11 to 25) as applicable.

Forwarding the "Questionnaire" should not be delayed whilst particular information is being sought, this can always be transmitted at a later time. NFPs should not be discouraged from contacting the Unit by telephone to discuss the "Questionnaire" and request.

Once the "Questionnaire" is received at the Unit, an acknowledgement facsimile will be sent confirming receipt (see Appendix III).

In the event of international assistance not being required, the information contained in the "Questionnaire" can be shared with the international community as part of the international exchange of information following chemical emergencies.

Appendix I

URGENT URGENT URGENT

ENVIRONMENTAL EMERGENCY QUESTIONNAIRE

FROM:
(e.g. National Focal Point / Government Agency / UNDP Resident Representative)

TO: **UNEP/OCHA Environmental Unit**
Disaster Response Branch
OCHA-Geneva
Palais de Nations
1211 Geneva 10
Switzerland

Tel: +41-22-917-1142 In case of Emergency Only +41-22-917-2010
Fax: +41-22-907-02-57
E-Mail: ochagva@un.org

Date: **Number of pages** **(including this)**

FURTHER TO OUR TELEPHONE CONVERSATION / FACSIMILE OF ..... (date), PLEASE FIND ATTACHED COMPLETED QUESTIONNAIRE.

Sign.

Name.

Position.

Appendix II

QUESTIONNAIRE COVER SHEET

Note: • This page **must** accompany all Questionnaire returns.
• Sections 1 - 10 and must be completed on all occasions.
• Sections 11 -25 should only be completed as required; the applicable/not applicable boxes ticked and only the relevant sections returned.

SECTIONS 1 TO 10 TO BE COMPLETED ON ALL REQUESTS FOR ASSISTANCE

Section 1. Reference
Section 2. Contact Persons In-country
Section 3. Preliminary Information
Section 4. Type of Activity Involved
Section 5. Main Consequences of Accident
Section 6. Description of Accident
Section 7. Location and Description of Affected Area.
Section 8. Weather at Time of Accident
Section 9. Main Developments.
Section 10. Main Substances Involved

SECTIONS 11 TO 25 SHOULD ONLY BE COMPLETED IF APPLICABLE (please tick appropriate box)

		Applicable	Not Applicable
Section 11.	Factors Affecting Emergency response	☐	☐
Section 12.	Protective Action Taken Immediately Following Accident.	☐	☐
Section 13.	Human Consequences.	☐	☐
Section 14.	Transboundary Impact.	☐	☐
Section 15.	Material Contamination.	☐	☐
Section 16.	Limitations and Restrictions.	☐	☐
Section 17.	Impact on the Environment.	☐	☐
Section 18.	Surface Water Pollution.	☐	☐
Section 19.	Underground Water pollution.	☐	☐
Section 20.	Soil Pollution.	☐	☐
Section 21.	Damage to Natural and Cultural Heritage. ☐	☐	
Section 22.	Effects on Fauna.	☐	☐
Section 23.	Effects on Flora.	☐	☐
Section 24.	Clean-up and Decontamination Requirements.	☐	☐
Section 25.	Request for Assistance	☐	☐

Appendix III

ENVIRONMENTAL ASSESSMENT
IN
CHEMICAL EMERGENCIES
"QUESTIONNAIRE"

---

1. REFERENCE:

1.1 Country: **1.2 Type of Emergency:**

1.3 Date of Report: **1.4 Report No:**

---

2. CONTACT PERSONS IN-COUNTRY

2.1 FIRST DESIGNATED CONTACT

2.1.1 Name of Person:

2.1.2 Position:

2.1.3 Organisation:

2.1.4 Tel: **2.1.5 Fax:** **2.1.6 Telex:**

2.2 SECOND DESIGNATED CONTACT

2.2.1 Name of Person:

2.2.2 Position:

2.2.3 Organisation:

2.2.4 Tel: **2.2.5 Fax:** **2.2.6 Telex:**

---

3. PRELIMINARY INFORMATION

3.1 Date of Accident:

3.2 Local Time:

3.3 Country: **3.4 City/Town/Province/Region**

3.5 Geographical Position of Affected Area:

Lat: **Longtd:**

3.6 Transboundary Effects: **Yes ☐** **No ☐**

If Yes see Sec 14

3.7 Has the cause of the accident been identified and contained? **Yes ☐** **No ☐**

If Yes: **Date:** **Time:**

If No, what is the expected/possible development?

4. TYPE OF ACTIVITY INVOLVED

☐ Transport	☐ Storage	☐ Waste
☐ Warehouse	☐ Transfer	☐ Process

5. MAIN CONSEQUENCES OF ACCIDENT

☐ Fire	☐ Fatalities
☐ Explosion	☐ Severe Injuries
☐ Toxic Release	☐ Light Injuries
☐ Water Pollution	Material Damage
☐ Air Pollution	☐ Damage to Fauna
☐ Soil Contamination	☐ Damage to Flora

---

6. DESCRIPTION OF ACCIDENT:

7. LOCATION & DESCRIPTION OF AFFECTED AREA

☐ Flat Land ☐ Valley ☐ Hilly ☐ Mountainous

☐ Altitude m. ☐ Uninhabited

7.1 POPULATION

☐ Dense Urban - city, town ☐ Sparse Urban - city/town suburbs

☐ Small Urban - village ☐ Rural - farmland, forest

☐ Coastal ☐ Landlock

7.2 LAND USE

☐ Residential ☐ Heavy Industrial ☐ Nature Reserves

☐ Commercial ☐ Light Industrial ☐ Sites of Special Scientific Interest

☐ Recreational ☐ Agricultural

---

8 WEATHER AT TIME OF ACCIDENT

[N - Normal Conditions A - Abnormal Conditions E - Extreme Conditions]

	N	A	E
Temperature °C (°F)	☐	☐	☐
Wind	☐	☐	☐

Average speed: Max speed:

Direction:

☐ Variable

☐ N ☐ SE ☐ W

☐ NE ☐ S ☐ NW

☐ E ☐ SW

Precipitation

	N	A	E	
☐ Rain	☐	☐	☐	
☐ Snow		☐	☐	☐
☐ Hail	☐	☐	☐	
☐ Fog	☐	☐	☐	

Cloudiness

☐ No ☐ Full ☐ Partial

Atmospheric Stability

☐ Very Stable ☐ Neutral

☐ Unstable ☐ Stable

☐ Slightly Unstable ☐ Very Stable

Expected forecast for the next 72 hours:

9 MAIN DEVELOPMENT

☐ **FIRE**
- ○ **In Building**
- ○ **In Processing Unit**
- ○ **Vessel**
- ○ **Stacked Product**
- ○ **Pool Fire**
- ○ **Other .....**

☐ **EXPLOSION**
- ○ **Confined Area**
- ○ **Semi-confined Area**
- ○ **Open area**
- ○ **Detonation**
- ○ **Deflagration**

☐ **BLEVE**

☐ **Boil-Over**

☐ **Other type of event .....**

☐ **SUBSTANCE RELEASE**
- ○ **Instant Release**
- ○ **Continued Release**
- ○ **In the Atmosphere**
- ○ **In Surface Water**
- ○ **In Ground Water**
- ○ **In/On the Soils**
- ○ **Via Finished Product**
- ○ **Via Solid Waste**
- ○ **Via Liquid Waste**
- ○ **Other means .....**

.....

---

10 MAIN SUBSTANCES INVOLVED

Substance A:

Trade/Chemical Name.....

UN No. .....

UN Class .....

Chem Data Sheet .....

☐ **Raw Material** ☐ **Waster**

☐ **Intermediate Product** ☐ **Other .....**

☐ **Finished Product**

State:

☐ **Pure** ☐ **Dust** ☐ **Gas/Vapour**

☐ **Solution/Mixture** ☐ **Liquid** **Liquid Gas**

☐ **Solid** ☐ **Superheated Liquid** ☐ **Aerosol**

Temperature: **°C (°F)** **Pressure:** **Concentration:**

Approx Quantities Involved:

	Weight (kg)	**Volume (m³)**	**Litres**
☐ **Burnt:**			
☐ **Released:**			
☐ **Exploded:**			

[Where a number of different substances or mixed load is involved repeat for each known substance]

11 FACTORS AFFECTING EMERGENCY RESPONSE

- ☐ **Low visibility**
- ☐ **Unfavourable meteorological conditions**
- ☐ **Difficult terrain**
- ☐ **Lack of Chemical Information**
- ☐ **Accident escalating**
- ☐ **Security risk**
- ☐ **Destruction of Emergency Response Infrastructure**
- ☐ **Contaminated environment**
- ☐ **Lack of adequate protective equipment**

---

12 PROTECTIVE ACTION TAKEN IMMEDIATELY FOLLOWING ACCIDENT

Radius: (km)	**No of people:**	**Duration: (hrs/days)**

- ☐ **Protected Area**
- ☐ **Population Evacuated**
- ☐ **Population Sheltered**
- ☐ **Population Warned**
- ☐ **Business & Production Activity Interrupted**
- ☐ **Road closures & restricted access**
- ☐ **Interruption of Drinking Water**
- ☐ **Interruption of Irrigation**
- ☐ **Swimming Prohibited**
- ☐ **Navigation Prohibited**
- ☐ **Restricted Use of Agricultural Products**
- ☐ **Restricted Use of Fish Product**

13 HUMAN CONSEQUENCES

	Number
☐ Dead	
☐ Missing	
☐ Seriously Affected requiring hospitalisation	
☐ Mildly Affected not hospitalised	

Main Types of Injuries:

☐ Burns (hot/cold)	☐ Intoxication by Ingestion	☐ Contamination
☐ Trauma	☐ Intoxication by Contact	☐ Irradiation
	☐ Intoxication by Inhalation	☐ Others .....

Maximum distance where the effects have been recorded:

Lethal effects: **Km.**

Severe Injuries: **Km.**

---

14 TRANSBOUNDARY IMPACTS

14.1 Actual **Yes** ☐ **No** ☐

Please describe:

14.2 Potential **Yes** ☐ **No** ☐

Please describe:

15 MATERIAL CONTAMINATION

CONTAMINATION

	Total max. distance	50% max. distance	Any max. distance
☐ Installation at origin of accident			
☐ On-Site/Immediate Accident Area			
☐ Public Buildings			
☐ Residential			
☐ Industrial Buildings			
☐ Roads			
☐ Railways			
☐ Power			
☐ Water			
☐ Telecomms			
☐ Sewage			
☐ Heritage Buildings			
☐ Other (please specify).....			

16 LIMITATIONS AND RESTRICTIONS

	Distance (km)	Approx Area (km²)	Population Affected
☐ Circulation			
☐ Power Supply			
☐ Telecomms			
☐ Drinking Water			
☐ Swimming			
☐ Fishing			
☐ Hunting			
☐ Agricultural Products			

17 IMPACT ON THE ENVIRONMENT

17.1 AIR POLLUTION

17.1.2 AREA AFFECTED

☐ **Urban area** ☐ **Rural area** ☐ **Natural area** ☐ **Area of Particular Ecological Interest**

17.1.3 GEOGRAPHICAL SPREAD

	Distance [km]		Distance [km]
☐ **Within immediate accident area**		☐ **Beyond Province/ Region**	
☐ **Beyond immediate accident area**		☐ **Transboundary effects**	
☐ **Area affected**	**km²**		

17.1.4 TYPE OF RELEASE

☐ **Sudden**

☐ **Continuous**

17.1.5 PHYSICAL STATE IN AMBIENT AIR

☐ **Gas/Vapour**

☐ **Aerosol**

☐ **Dust**

☐ **Smoke**

17.1.6 NATURE OF POLLUTANTS

☐ **Toxins with immediate effects**

☐ **Toxins with delayed effects**

☐ **Bio-toxins**

☐ **Pathogens**

☐ **Irritating products**

☐ **Odoriferous products**

☐ **Dense fog**

☐ **Dirt products**

17.1.7 CONCENTRATION MEASURED Yes ☐ **No** ☐

If Yes:	**Average:**	**Max:**		**Average:**	**Max:**
☐ **Strong Acidity**			☐ **Hydrocarbons**		
☐ **SO²**			☐ **Others**		
☐ **Dust**					

18. SURFACE WATER POLLUTION

18.1 GEOGRAPHICAL SPREAD

Distance [km]

18.1.2 AREA AFFECTED

☐ **Stream/River**

☐ Within immediate accident area

☐ Beyond immediate accident area

☐ Beyond Province/ Region

☐ Transboundary effects

☐ Area affected km²

☐ Lake/Pond

☐ Wetland

☐ Area of Particular Ecological Interest

☐ Irrigation Catchment Area

☐ Irrigation Catchment Area

☐ Harbour/Port Area

☐ Area of Touristic Interest

18.1.3 ENVIRONMENTAL COMPARTMENT AFFECTED

☐ Animals [see sect.]

☐ Plants [see sect.]

18.1.4 EFFECTS

☐ Oxygen depletion

☐ Modification of flow

☐ Erosion

☐ Silting

☐ Colouring

☐ Suspended matter

☐ Foam

☐ Floating materials

18.1.5 NATURE OF POLLUTANTS

☐ Toxins with immediate effects

☐ Toxins with delayed effects

☐ Bio-toxins

☐ Bio-accumulative products

☐ Pathogenic organism

☐ Corrosive products

☐ Hydrocarbons

☐ Colouring products

☐ Detergents

18.1.6 CONCENTRATION MEASURED Yes ☐ No ☐

If Yes: Average: Max:

Average: Max:

☐ pH

☐ Suspended matter

☐ BOD 5

☐ COD

☐ Ammoniacal nitrogen

☐ Total nitrogen

☐ Conductivity

☐ Total Heavy Metals

☐ Hydrocarbons

☐ Others

19. UNDERGROUND WATER POLLUTION

19.1 GEOGRAPHICAL SPREAD AFFECTED

	Distance [km]
☐ Within immediate acident area	
☐ Beyond immediate accident area	
☐ Beyond Province/ Region	
☐ Transboundary effects	
☐ Area affected km²	

19.1.2 AREA/MEDIUM

- ☐ Surface Water Table
- ☐ Deep Water Table
  - ☐ Karst
  - ☐ Used for making Drinking Water
- ☐ Used for Irrigation
- ☐ Other Purposes
  - ☐ Not Exploited

19.1.3 NATURE OF POLLUTANTS

- ☐ Toxins with immediate effects
- ☐ Toxins with delayed effects
- ☐ Bio-Toxics
- ☐ Bio-accumulative products
- ☐ Pathogenic organisms
- ☐ Corrosive products
  - ☐ Hydrocarbons
- ☐ Colouring products
- ☐ Detergents
- ☐ Unsavoury taste products

19.1.4 WATER QUALITY MEASURED: Yes ☐ No ☐

If Yes:

	Average:	Maximum:
☐ TOC		
☐ Conductivity		
☐ Salinity		

20. SOIL POLLUTION

20.1 GEOGRAPHICAL SPREAD

20.1.2 AREA/MEDIUM/AFFECTED

☐ **Urban area** ☐ **Industrial area** ☐ **Agricultural area**

☐ **Natural area** ☐ **Area of particular ecological interest** ☐ **Area of touristic interest**

	Distance [km]		**Distance [km]**
☐ **Within immediate accident area**		☐ **Beyond Province/ Region**	
☐ **Beyond immediate accident area**		☐ **Transboundary effects**	

☐ **Area affected** **km²**

21.1 DAMAGE TO NATURAL AND CULTURAL HERITAGE

☐ **Listed Ancient Monuments**

Name of Site:	**Location:**	**Nature of Damage:**

☐ **Listed Heritage Buildings**

Name of Site:	**Location:**	**Nature of Damage:**

☐ **Listed Landscapes**

Name of Site:	**Location:**	**Nature of Damage:**

☐ **Listed - Others**

Name of Site:	**Location:**	**Nature of Damage:**

22. EFFECTS ON FAUNA

22.1 FARMED ANIMALS

☐ **Dead**

☐ **Injured**

☐ **Unsuitable for Human Consumption**

☐ **Growth Inhibition**

☐ **Reproduction Inhibition**

☐ **Other Long Term Consequences (actual or suspected)**

Number of Individuals or Total Mass Concerned

Quantity Concerned

☐ **Cattle**

☐ **Sheep/Goat**

☐ **Pigs**

☐ **Poultry**

☐ **Fish**

☐ **Shell-fish**

☐ **Others**

22.2 WILD ANIMALS

☐ **Dead**

☐ **Injured**

☐ **Unsuitable for Human Consumption**

☐ **Growth Inhibition**

☐ **Reproduction Inhibition**

☐ **Other long term consequences (actual or suspected)**

☐ **Destruction of Specific Biotopes**

Threatened/endangered species according to the UN/ECE European Red List

☐ **Large mammals**

☐ **Small mammals**

☐ **Birds**

☐ **Reptiles**

☐ **Amphibians**

☐ **Fresh Water Fish**

☐ **Salt Water Fish**

☐ **Invertebrates**

Threatened/endangered species according to the UN/ECE European Red List

Category:

○ **Endangered** ○ **Vulnerable** ○ **Rare** ○ **Indeterminate**

○ **Insufficiently Known**

23 EFFECTS ON FLORA

23.1 CULTIVATED OR EXPLOITED PLANT SPECIES

☐ Totally Destroyed
☐ Partially Destroyed
☐ Unsuitable for Use
☐ Growth inhibition
☐ Reproduction Inhibition
☐ Others

Area in hectares or total mass concerned

☐ Cereals
☐ Fruits and Vegetables
☐ Coniferous Forests
☐ Hardwood Forests
☐ Pleasure Grounds
☐ Others

23.2 WILD PLANT SPECIES

☐ Totally Destroyed
☐ Partially Destroyed
☐ Growth Inhibition
☐ Reproduction Inhibition
☐ Other long term consequences (actual or suspected)
☐ Destruction of specific biotopes

Threatened/ Endangered species according to UN/ECE European Red List

Category:

○ Endangered ○ Vulnerable ○ Rare ○ Indeterminate
○ Insufficiently Known

23.3 UNFAVOURABLE EVOLUTION OF BIOLOGICAL QUALITY INDICATORS IN ECO-SYSTEM

☐ Blotic Index ☐ Crustaceans ☐ Mosses ☐ Lichens
☐ Plankton ☐ Molluscs ☐ Worms ☐ Mushrooms
☐ Algae ☐ Others

24. CLEAN UP AND DECONTAMINATION REQUIREMENTS

24.1 SOLID WASTE ELIMINATION

☐ On-site treatment ☐ Off-site treatment ☐ Incineration

☐ Physico-chemical treatment ☐ Recovery/Recycling ☐ Landfill disposal

☐ Deep underground disposal ☐ Others .....

24.2 LIQUID WASTE ELIMINATION

☐ On-site treatment ☐ Off-site treatment ☐ Incineration

☐ Physical-chemical treatment ☐ Biological treatment ☐ Recycling/Reuse

☐ Containment in special basin ☐ Others .....

24.3 SURFACE WATER DECONTAMINATION

☐ Use of absorbing agents ☐ Use of dispersing agents ☐ Other treatment .....

24.4 SOIL DECONTAMINATION

☐ Monitoring/analytical follow up ☐ Natural degradation of contaminants ☐ Forced biological treatment

☐ Earth leaching/soil flushing ☐ Hydraulic barriers ☐ Water tight confinement walls

☐ Vitrification

24.4.1 SOIL DECONTAMINATION

☐ Forced venting ☐ Cleansing and evacuation

○ under pressure ○ landfill disposal

○ under partial vacuum ○ treatment

○ with treatment of extracted gases ○ recycling

☐ Other .....

24.5 UNDERGROUND WATER DECONTAMINATION

☐ Monitoring/analytical follow up ☐ Injection of treating agents ☐ Pumping off and adrian treatment

☐ Drainage/water-table draw down ☐ Confinement walls ☐ Others .....

24 CLEAN UP AND DECONTAMINATION REQUIREMENTS (cont/..)

24.6 BUILDINGS DECONTAMINATION

☐ Wet ☐ Dry

Contaminant can be: ○ Diluted and allowed to enter drains

○ Contained/collected and disposed-off

25 REQUEST FOR ASSISTANCE

25.1 NATIONAL GOVERNMENT AGENCY COORDINATING THE RESPONSE

25.1.1 Agency:

25.1.2 Name of contact person:

25.1.3 Position:

25.1.4 Address:

25.1.5 Tel:

25.1.6 Fax:

25.1.7 Telex:

25.2 What Local/National emergency measures are being undertaken and/or planned?

25.3 Is there in-country capacity to manage the response? **Yes** ☐ **No** ☐

If No, what specific international assistance is required?

	Information	**Expert on-site**	**Equipment & materials**
Type of Assistance:			
☐ **Assessment**			
☐ **Coordination**			
☐ **Emergency management**			
☐ **Technical advice**			
☐ **Scientific advice**			
☐ **Chemical**			
☐ **Analysis**			
☐ **Firefighting**			
☐ **Pollution control**			
☐ **Decontamination**			
☐ **Restoration**			
☐ **Communications**			
☐ **Other (please specify)**			

25.4 ADDITIONAL INFORMATION ON ASSISTANCE REQUIRED

(i) Type of assistance (as above):

Remarks:

(ii) Type of assistance (as above):

Remarks:

(iii) Type of assistance (as above):

Remarks:

25.5 REQUEST FOR ASSISTANCE ALREADY MADE

25.5.1 Have other international organizations and/or countries been notified and/or requested to assist?
Yes ☐ No ☐

If Yes, which?

25.5.2 In nuclear and marine accidents have IAEA or IMO been notified? Yes ☐ No ☐

Appendix IV

URGENT URGENT URGENT

ENVIRONMENTAL EMERGENCY QUESTIONNAIRE

FROM:
(e.g. National Focal Point / Government Agency / UNDP Resident Representative)

TO: **UNEP/OCHA Environmental Unit**
Disaster Response Branch
OCHA-Geneva
Palais de Nations
1211 Geneva 10
Switzerland

Tel: **+41-22-917-1142 In case of Emergency Only +41-22-917-2010**
Fax: **+41-22-907-02-57**
E-Mail: **ochagva@un.org**

TO:

(e.g. National Focal Point / Government Agency / UNDP Resident representative)

Date: **Number of pages** **(including this)**

ACKNOLEDGE RECEIPT OF YOUR FACSIMILE DATED ……WHICH IS RECEIVING URGENT ATTENTION

Sign.

Name.

Position.