Assessment of capacity in WHO European Member States to address health-related aspects of chemical safety

Presented at the WHO Regional Office for Europe workshop:
“Health aspects of chemicals safety: strategic directions for actions”, Bonn, Germany, 17-19 October 2012
ABSTRACT

This report presents the results of an on-line survey carried out by the WHO Regional Office for Europe in July–September 2012 to assess and identify gaps in the existing capacity of the WHO European Member States to address the health-related aspects of chemical safety and meet their commitments to the Parma Declaration on Environment and Health.

KEYWORDS

Capacity building
Chemical safety
Emergency preparedness
Environment and Public Health
Environmental exposure
International cooperation

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Background

There are a number of reasons for governments and public organizations at the national and international levels to improve the regulation of chemical in their countries: the multiplicity and severity of the health effects of exposure to chemicals; the growing burden of diseases caused by chemicals and mixtures of chemicals; the rapid increase both in the volume and diversity of the chemical products on the market; and the movement of chemicals and products containing chemical substances. International agreements, such as the Strategic Approach to International Chemicals Management (SAICM), the International Health Regulations (IHR), conventions of the International Labour Organization (ILO), and multilateral environmental agreements, recognize that some essential elements are required to assure sound chemical management, including strong legislation, risk-reduction strategies and plans, information exchange, specific measures for the protection of vulnerable and highly exposed groups of the population, intersectoral coordination and cooperation with multistakeholder engagement and last, but not least, sufficient capacity of all stakeholders.

The Parma Declaration on Environment and Health adopted at the Fifth Ministerial Conference on Environment and Health in Parma, Italy, on 10-12 March 2010, and its Commitment to Act, call for action to strengthen the prevention of diseases arising from exposure to chemicals. WHO Member States are committed to contributing to SAICM, to protecting children from the risks posed by exposure to harmful substances and preparations, and to acting on the identified risks of exposure to carcinogens, mutagens, reproductive toxicants, and endocrine disruptors. World Health Assembly resolutions WHA55.16, WHA58.3, WHA58.22, WHA59.15, WHA63.25 and WHA63.26 urge Member States to build the necessary capacity in the health sector to enable it to participate in the implementation of international chemicals-related agreements, and to respond to all the health aspects of chemical emergencies and emerging issues.

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Objective of the survey

The purpose of the survey was to assess capacities in the WHO European Member States to address the health aspects of chemical safety in their countries. The questionnaire annexed to this report was developed to collect the information; the target groups included medical, environmental and other professionals (e.g. biologists, chemists and toxicologists).

The analysis, which was presented and discussed during the WHO Regional Office for Europe workshop, “Health aspects of chemicals safety: strategic directions for actions”, in Bonn, Germany, on 17-19 October 2012, will serve as a basis for planning short- and medium-term action to facilitate the implementation of sound chemical management in the Member States in accordance with the Parma Declaration on Environment and Health, and the various World Health Assembly resolutions and international agreements on the prevention and mitigation of chemical exposure and the reduction of risks and burden of disease.

Structure of questionnaire and method of analysis

The questionnaire (Annex) was developed by the WHO European Centre for Environment and Health of the WHO Regional Office for Europe, in consultation with experts from Albania, Belarus, Georgia, Germany, Kazakhstan, the Netherlands (WHO Collaborating Centre on Risk assessment), Poland, the Russian Federation, Serbia, Slovenia, and the United Kingdom (WHO Collaborating Centre on Public Health Management of Chemical Incidents). All of the notes and proposals made by the experts were taken into account and included in the questionnaire.

The final version of the questionnaire included 37 questions grouped into 10 different categories addressing chemicals-management activities and chemicals of concern, taking vulnerable population groups into account. A brief explanation of the rationale behind the questionnaire and how to use it was included (via internet link using SurveyMonkey® software).

The data were aggregated to define priority action taken to meet the requirements of the Parma Declaration on Environment and Health (2010), relevant WHA resolutions, IHR and other international agreements in the area of chemical safety.

Chemicals-management activities

All relevant international agreements, such as the Basel Convention on the control of transboundary movements of hazardous wastes and their disposal (1989), the Rotterdam Convention on the prior informed consent procedure for certain hazardous chemicals and pesticides in international trade (1998), the Stockholm Convention on persistent organic pollutants (2001), IHR and SAICM, include requirements for and recommendations on action to protect human health and the environment, with the following priorities: strengthening of relevant legislation; implementation of risk-reduction programmes; establishment of
emergency-preparedness and response measures; management of contaminated sites; monitoring; risk assessment; information exchange; education and training. Questions addressing these action areas were included in the questionnaire.

Chemicals of concern

In the Parma Declaration on Environment and Health, ministers of health and the environment, and high-level country representatives agreed “...to act on the key environment and health challenges of our time that include...concerns raised by persistent, endocrine-disrupting and bio-accumulating harmful chemicals and (nano)particles...” (page 3e). The same priority chemicals, as well as carcinogens, mutagens and reproductive toxicants, are also indicated in regional priority goal 4 of the Parma Commitment to Act. WHA Resolution 63.25 on the improvement of health through safe and environmentally sound waste management⁶ and WHA 63.26 on the improvement of health through sound management of obsolete pesticides and other obsolete chemicals⁷ urge Member States and WHO to: assess the health aspects of wastes management with the aim of making it safe and environmentally sound; work with relevant institutions, such as the Basel Convention, the Food and Agriculture Organization (FAO), the United Nations Environment Programme (UNEP), and SAICM; improve health through the sound management of waste, obsolete pesticides and chemicals; adopt or strengthen national policies and legislation; and increase support for training, capacity-building and the coordination of activities. Questions based on these documents were included in the questionnaire, as well as questions relating to the elimination of asbestos, taking its hazardous characteristics and WHO policy concerning this chemical into account.

Vulnerable population groups

The aim included in the Parma Commitment to Act, “to protect each child from the risk posed by exposure to harmful substances and preparations, focusing on pregnant and breast-feeding women and places where children live, learn and play”, determined the inclusion of specific questions on policy and activities to protect these population groups.

A statistical analysis of the on-line responses was carried out using Microsoft Excel and MonkeySurvey® software programmes.

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Analysis of responses

Of the 53 WHO European Member States, 33 (approximately two thirds) participated in the survey: Albania, Andorra, Armenia, Austria, Belarus, Bosnia and Herzegovina, Croatia, Cyprus, Denmark, Estonia, Finland, Georgia, Germany, Hungary, Iceland, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Malta, Montenegro, Netherlands, Poland, Portugal, Republic of Moldova, Romania, Serbia, Slovakia, Switzerland, Tajikistan, The Former Yugoslav Republic of Macedonia, United Kingdom, and Uzbekistan (Fig. 1).

Fig.1. Country participation in the survey

Legislation

The questionnaire included questions pertaining to chemicals-related legislation pertaining to the life-cycle approach, the precautionary principle, limitations and prohibitions, premarking procedures, specific requirements to protect the most vulnerable population groups (e.g. pregnant and breast-feeding women, children), and prohibition of the use, sale and production of chrysotile asbestos.

According to the responses, all except one of the all Member States that participated in the survey have specific legislation to regulate chemicals management (Fig. 2).
Only three Member States reported (less than 10%) having legislation that regulates manufactured nanoparticles and nanomaterials. These types of chemicals (nanoforms) are not discussed in this document in view of the gaps in the legislation and in the methodology pertaining to their use, as well as in knowledge about addressing the specific needs of vulnerable population groups revealed by the survey.

The characteristics associated with the management of different types of chemicals and with the relevant legislative measures do not differ significantly across the Region (Fig. 3).
More than a half of the countries responded that they use the life-cycle approach as their basis in developing legislation and that they apply the precautionary principle. In addition, the same countries reported that they have requirements for registering chemicals, providing information to down-stream users, and carrying out exposure assessment at the premarketing stage.

Agricultural chemicals are registered in almost all Member States in the Region.

Two thirds of the Member States have legislation including specific requirements for the protection of pregnant and breast-feeding women, as well as children, from chemical hazards. Positive responses about the existence of occupational safety regulations for the protection of women vary from 63% of the countries (all types of chemicals) to 33% (management of toxic waste). Less than a half of the countries have prohibited the use of the most dangerous chemicals in products destined for this vulnerable group (Fig. 4).

A similar situation was revealed in relation to the protection of children in places where they learn and play and to prohibition of the use of chemicals in all products for children (Fig.5).
Fig. 4. Specific requirements for the protection of pregnant/breast-feeding women from occupational exposure (blue) and exposure to dangerous chemicals in products (red)

Fig. 5. Specific requirements for the protection of children from exposure to chemical hazards in places where they learn and play (blue) and from dangerous chemicals in products (red)
Seventy-two per cent (72%) of the countries in the Region have banned the production, sale and use of chrysotile asbestos by law (Fig. 6).

Fig. 6. Proportions of countries with/without ban on production, sale and use of chrysotile asbestos

Interagency cooperation
Recognizing that a multisectoral approach is essential to the implementation of sound chemical management, 95% of the countries reported having established a mechanism of interagency cooperation in the area of chemical safety. The health sector is represented in this mechanism in the majority (97%) of the countries in question.

Risk-reduction policies, programmes and plans
Policies and action plans to reduce chemical risk are in place in 87.9% of the Member States (29 responded positively) where health-sector specialists participated in their development and implementation (Fig. 7). However, in only half of these countries are programmes set up to reduce/eliminate chemical risks in children (Fig. 8).
The proportion of countries with policies to reduce the risk of various chemicals, and action plans to implement them, is higher for agricultural and industrial chemicals (65%) and lower for biocides (48%) (Fig. 9).

**Fig.8: Rate of countries that have developed risk-reduction plans for children**

![Pie Chart](chart.png)

- **policies/plans not developed**
- **policies/plans developed**

**Fig.9. Types of chemicals addressed by policies and plans**

![Bar Chart](chart.png)

- **Toxic wastes**
- **Obsolete pesticides**
- **Biocides**
- **Agricultural**
- **Industrial**
- **All type of chemicals**

**Information exchange**

Only one Member State indicated the absence of any official source of information on chemicals. A lot of information regarding chemicals management is provided on line, including the registration dossiers submitted within the frame of the EU registration procedure, geographical information, announcements about specific dangerous products on the market, press releases, web sites of the European Chemical Agency and labour inspectorates, help desks, information on nanoparticles and biocides, registers for complaints about cosmetics, etc.
In the majority of the countries, priority was given to providing information on chemical hazards and legislation (Fig. 10).

Fig. 10. Availability of information (on line and in hard copy)

![Bar chart showing availability of information on chemical hazards and legislation](image)

Note. CMR = carcinogenic, mutagenic or toxic to reproduction; vPvB = very persistent and very bioaccumulative; PBT = persistent, bioaccumulative and toxic; BA = bioaccumulative; EDCs = endocrine-disrupting chemicals.

**Risk assessment**

Around two thirds of the responding Member States reported using risk assessment as an essential instrument in the decision-making process. A lack of human, laboratory and financial resources were indicated. Most responders considered that the necessary resources partly satisfied their countries’ needs (Figs 11 and 12).

Some Member States reported that very few dedicated specialists were able to assess risks at the national level, training for human resources was limited and insufficient, and laboratory resources could not cover current needs.

**Fig. 11. Use of risk assessment (RA) in the decision-making process in countries of the WHO European Region**
Assessment of WHO European Member States’ capacity to address health-related aspects of chemical safety

Fig. 12. Capacities for risk assessment in WHO European Member States

- Methodology harmonized at national level
- Methodology harmonized at regional level
- Methodology to assess risk to vulnerable population groups used
- Human resources trained and available
- Laboratory resources correspond to needs
- Financial resources available

Percentage capacities meet needs: RA used
Percentage capacities partly meet needs: RA partly used
Percentage capacities do not meet needs: RA not used
Education and training

In most of the countries in the Region, basic courses in toxicology and epidemiology are included in the curricula of higher education institutions. Students of medical and biological science are the core groups (Fig. 13).

Fig. 13. Proportion of toxicology, epidemiology and risk-assessment courses in university curricula and categories of course students

Two thirds of the Member States responded that medical, biological and other professionals are trained in toxicology, risk assessment and noncommunicable disease epidemiology (Fig. 14).

Fig. 14. Postgraduate training courses in toxicology, epidemiology of noncommunicable diseases and risk assessment
Many other professional categories were also indicated as being educated in toxicology, epidemiology and risk assessment: chemists, food managers, pharmacists, environmental health specialists, ecology scientists, public health specialists, clinical biochemistry specialists, engineers etc. Curricula are developed mostly for master’s studies and doctoral degrees.

Information, education and training are considered to be critical elements of sound chemical management. Unfortunately, requirements/procedures for informing pregnant and breast-feeding women and educating schoolchildren about the risks associated with chemicals and how to avoid them existed in only half of the Member States (Fig. 15).

**Fig. 15. Rate of countries that have introduced procedures for informing schoolchildren and pregnant/breast-feeding women about risks associated with chemicals**

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**Health-sector participation in the implementation of multilateral international agreements in the area of chemical safety**

There are a number of legally binding agreements (the Basel, Rotterdam and Stockholm Conventions, IHR) and voluntary agreements (SAICM, the Globally Harmonized System for Classification and Labeling of Chemicals (GHS)), which aim to protect human health and the environment from negative chemical impact. A multisectoral approach is indicated as one of the main principles for implementation of the agreements at both the national and international levels.
The World Health Assembly and the International Conference on Chemicals Management (ICCM)\(^8\), in their resolutions, have recognized the essential role of the health sector in the implementation of international chemicals-related agreements.

Eighty per cent (80%) of the European Member States have officially committed to an international agreement on chemical safety, the highest proportion to the Stockholm Convention on Persistent Organic Pollutants. The health sector is mostly involved in IHR implementation, while only one third of the Member States reported having appointed a health-sector contact point for SAICM.

In half of the Member States, the health sector does not participate in the development and implementation of policy on chemical safety. The gap is even bigger for GHS and SAICM. The same situation applies to health-sector representation in interministerial committees on international agreements.

Only a fifth of the Member States reported the presence of financial resources to cover participation in the implementation of international agreements at the national level (Fig.16).

Emergency preparedness and response

Ninety per cent (90%) of the responders reported having developed a plan for emergency preparedness and response and all of them indicated that the health sector had been involved in its development and implementation. Eighty-five per cent (85%) of the Member States had included IHR requirements in their plans.

However, the capacity of Member States to respond to emergency situations differs significantly around the Region (Fig. 17).
The survey revealed that the main gaps in the area of emergency preparedness and response related to exposure scenarios/modelling, the establishment of poisons centres, long-term epidemiological follow-up, and the development of exposure monitoring and analytical laboratory capacity.

**Management of carcinogens, mutagens, reproductive toxicants, endocrine-disrupting and bioaccumulative chemicals**

The Parma Declaration and its Commitment to Act specifically address the management of chemicals that have the properties of carcinogens, mutagens, reproductive toxicants (CMR), endocrine disruptors (EDCs) and bioaccumulative chemicals (BA). Adequate capacities are
necessary in the Member States for them to be able to protect their populations, especially the most vulnerable groups, from the harmful health effects of these chemicals.

Several different aspects of the management of CMR, BA and EDCs were addressed in the questionnaire, such as legislation and obligatory requirements (Fig. 18), monitoring of media related risks and human biomonitoring (Fig. 19).

According to the results of the analysis, not all countries in the Region have specific legislation to regulate management of CMR and BA chemicals. In the majority of the countries there are no requirements for regulation of EDCs. Most probably this is the result of nonrecognition of these chemicals as a priority at the country level. In most of the Member States, the health sector does not participate in the evaluation of alternatives, risk assessment is not conducted and the most vulnerable groups are not defined (Fig. 18).

**Fig. 18. Characteristics of legislative base and management of CMR, BA and EDCs in the WHO European Member States**
At the same time, practically all of the countries have capacities for monitoring CMR and BA pollution of water, air and food (fully or partly). A lesser number of countries (around 60% of the responders) monitor the pollution of soil by CMR and have the capacities to identify these chemicals in consumer products. Only 20–50% has human biological monitoring programmes in place for assessing exposure to CMR, BA chemicals and EDCs (Fig. 19).

**Fig. 19. Monitoring of media specific risk and exposure**

The survey revealed that risk-reduction programmes aimed at reducing exposure to and risks of CMR, BA chemicals and EDCs are developed in less than 20% of countries and partly developed in half of them. A comparable situation was revealed regarding the development and implementation of research programmes that provide scientific background for consideration in introducing risk-reduction measures. In two thirds of the Member States, research programmes are either not funded at all or are only partly funded (Fig. 20).
Management of contaminated sites

The problem of contaminated sites still exists in the WHO European Region where there are thousands of industrially contaminated sites (CS), and where population groups living in these sites may be exposed to highly hazardous chemicals. It is necessary to build national capacities to identify CS, assess risks and implement risk-reduction measures to prevent acute and chronic diseases caused by chemicals.

The survey revealed that in 15% of the responding Member States there is no definition of CS and only half of them identified CS on their territories. Risk assessment was the basis for identification of CS in less than a half of the Member States and biological monitoring was used to this end in 13%.

More than 90% of the Member States implement clean-up procedures to reduce the risks of chemical exposure in industrially contaminated sites (88.5%) and in sites contaminated by obsolete pesticides and toxic wastes (95.8%).

A CS register has been set up and is publicly available in 40% of the Member States; the same percentage has included information on CS on their territories in an international register (Fig. 22).
Conclusions

Two thirds of the WHO European Member States participated in the Survey. Different groups of Member States were represented in the survey, such as the European Union Member States and countries of south-eastern and central Europe and central Asia. The results of the survey can be used to analyse the current capacity existing in the Region for addressing health-related aspects of chemical safety and identifying main achievements and gaps in this area.

The majority of the Member States have developed chemical legislation with the inclusion of the precautionary principle and the life-cycle approach. Risk-reduction strategies have been implemented in more than half of the Member States; in 90%, university curricula include education in basic toxicology, epidemiology and risk assessment. The survey revealed a high level of preparedness and response to emergency situations and concern about contaminated sites and related exposure. Most of the Member States use risk assessment as an essential tool in the decision-making process.

Note. BM = biological monitoring; RA = risk assessment.
Nevertheless, there are still gaps. Capacity building should remain an ongoing process if sound chemical management is to be achieved.

So less than a half of the Member States have developed and adopted legal requirements relating to the assessment of exposure to, and the risk of exposure to, biocides and toxic wastes. The same countries have not adopted specific legal requirements in connection with the protection of pregnant/breast-feeding women and children from harmful chemicals in products. Risk-reduction policies and programmes specifically designed for child protection are in place in only half of the Member States. In some countries, there is a lack of human, laboratory and financial resources for the assessment of chemical risk. Educational programmes for pregnant women and children on chemical risks are not in place in many countries. The health sector is involved in international agreements (not counting IHR) in one third of the Member States. More than half do not have the capacities needed for developing scenarios of exposures in emergency situations, nor for performing long-term follow-up of health impact. In many countries, there are no poisons centres. Only 20% of the Member States have sufficient capacities for assessing exposures to carcinogens and other harmful chemicals and enough funds to conduct scientific research.

The findings of the survey confirm the existence of gaps in chemicals management that should be addressed at the national and international levels to protect the population from exposure to harmful chemicals.
**Annex**

**Questionnaire for assessment of national capacities to address health aspects of chemical safety**

Please, answer to **7 August, 2012**

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**Introduction**

The Declaration adopted by the Fifth Ministerial Conference on Environment and Health in Parma and its ‘Commitment to Act’ call for strengthening actions to prevent diseases arising from exposure to chemicals. Member States (MS) are committed to contribute to the Strategic Approach to International Chemicals Management (SAICM), to protect each child from the risks posed by exposure to harmful substances and preparations, and to act on the identified risks of exposure to carcinogens, mutagens and reproductive toxicants, as well as endocrine-disrupting. World Health Assembly resolutions (WHA 55.16, 58.3, 58.22, 59.15, 63.25, 63.26) urges MS to build capacity in health sector to participate in implementation of international “chemical” agreements and to respond to all health aspects of chemical emergencies and emerging issues.

The purpose of this questionnaire is to collect information on capacities to address health aspects of chemical safety at national level in the Member States of European Region of WHO. The data will be aggregated and presented to the consultative meeting to be convened in Bonn, October, 2012, to define priorities of actions following the Parma conference commitments, relevant WHA resolutions, requirements of International Health Regulations (IHR) and other international agreements in chemical safety area.

The target groups of this questionnaire are medical, environmental and other (biologists, chemists, toxicologists) professionals who are involved in health aspects of chemicals management.

The questionnaire consists of 6 parts. The first part collects information to confirm the identity of the country and the organization responding to the questionnaire that is necessary for WHO officer to make direct contact with the respondent as necessary. The remaining parts include questions relating to chemicals management at national and international level. It is estimated that the questionnaire can be completed in 30 minutes.

Choosing an answer, please fill in appropriate box with X. Please, use the additional space if you wish to provide additional information or comments relevant to a question. You may also use this space for additional information if the question is considered “not applicable” or in case you would like to provide information of relevant activities (for example, some legislation is under development or not planned to be developed, why? or if monitoring of other chemicals of national concern is in place, list those chemicals; etc.)
1. **Identity of respondent**

   Country: __________________________________________________________________
   
   Name of respondent: _______________________________________________________
   
   Institution: _______________________________________________________________
   
   E-mail address: _____________________________________________________________
   
   Direct telephone number: ____________________________________________________

2. **Country capacity to address health aspects in chemicals management**

2.1 **Legislation**

Is there specific legislation that regulates chemicals management*?  Yes [ ]  No [ ]

*legislation of chemical management in a context of this questionnaire doesn't include legislation on environmental media (air, water, soil, food) protection

If yes, please, indicate some characteristics of legislation:

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<th>All types of chemicals</th>
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<th>Agricultural</th>
<th>Biocides</th>
<th>Nanoparticles/nanomaterials</th>
<th>Obsolete pesticides and chemicals</th>
<th>Toxic chemical wastes</th>
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Requirements to protect pregnant and breast-feeding women are included:
### Protection on working places

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<td>- Prohibition of use of hazardous chemicals in products for this category</td>
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### Requirements to protect children are included:

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<td>- Protection on places were children learn and play</td>
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<tr>
<td>- Prohibition of use of hazardous chemicals in products for this category</td>
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<tr>
<td>- Other (please specify)</td>
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</tr>
</tbody>
</table>

Is (use, sale, production, etc.) chrysotile asbestos banned by law in your country?

- [ ] Yes
- [ ] No

Provide any additional remarks, notes, proposals, if applicable:

#### 2.2. Interagency cooperation

Is the inter-ministerial/interagency cooperation mechanism* in place?

- [ ] Yes
- [ ] No

*Council, committee, any other form of different stakeholders cooperation for implementation of intersectoral approach to chemicals safety

If yes, please indicate:

Is the health sector a member of the mechanism

- [ ] Yes
- [ ] No

If not, please explain why

Provide any additional remarks, notes, proposals, if applicable:

#### 2.3. Risk reduction policy, program(s)/plan(s)

Is (Are) policy/ action plan(s) to reduce chemicals risk developed?

- [ ] Yes
- [ ] No

If yes, please indicate:

Does a health sector participate in its (their) implementation?

- [ ] Yes
- [ ] No

What types of chemicals are covered by policies or action plan(s):

<table>
<thead>
<tr>
<th>All types of chemicals</th>
<th>Industrial</th>
<th>Agricultural</th>
<th>Biocides</th>
<th>Nanoparticles/nanomaterials</th>
<th>Obsolete pesticides and chemicals</th>
<th>Toxic chemical wastes</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>

Provide any additional remarks, notes, proposals, if applicable:
2.4. **Information exchange**

Is (Are) there any source(s) of official information of chemicals?  

<table>
<thead>
<tr>
<th></th>
<th>Chemicals hazard information</th>
<th>Risk assessment results</th>
<th>Norms/standards</th>
<th>Incidents number and characteristics</th>
<th>Register of CMR*, vPvB, PBT, BA, DES</th>
<th>Legislation</th>
<th>Methodological documents, guidance</th>
<th>Scientific researcher, articles</th>
<th>Information for public, vulnerable groups</th>
<th>Any other information</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-line</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>On hard copies</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<td>☐</td>
</tr>
</tbody>
</table>

* CMR – carcinogens, mutagens, reproductive toxicants, vPvB – very persistent and very bioaccumulative chemicals, PBT – persistent bioaccumulative and toxic chemicals, BA – bioaccumulative chemicals, DES – disrupting of endocrine system chemicals

If you checked “any other information”, please, indentify it

Provide any additional remarks, notes, proposals, if applicable:

2.5. **Risk assessment**

Is risk assessment (e.g., hazard identification, exposure assessment, dose-response relationship, risk analysis) a necessary part for decision-making?  

If yes or partly, please, indicate the following:

- 2.5.1. Methodology is harmonized at national level
- 2.5.2. Methodology is harmonized at regional level
- 2.5.3. Methodology to assess risk for vulnerable groups (children, pregnant women, others) is used
- 2.5.4. Human resources are trained and available
- 2.5.5. Laboratory resources correspond to needs
- 2.5.6. Financial resources are available

For each item you checked “partly” additional information is appreciated:

2.6. **Education and training**
2.6.1. Is university curricular (toxicology, risk/exposure assessment) in place on a permanent basis?  
Yes [ ] No [ ]

If yes, which categories of students are educated?

- Medical students [ ]
- Biomedical science students [ ]
- Others (please indicate) [ ]

At what stage of education?

- Master degree students [ ]
- Doctoral degree students [ ]
- Others (please indicate at what stage) [ ]

2.6.2. Are training courses (toxicology, risk assessment) in place on a permanent/periodic basis?  
Yes [ ] No [ ]

If yes, what categories of professionals are trained?

- Medical professionals [ ]
- Biologists, Physiologists [ ]
- Master degree students [ ]
- Doctoral degree students [ ]
- Others (please indicate) [ ]

2.6.3. Is a requirement/procedure to inform pregnant and breastfeeding women about possible chemicals risk and ways to avoid that risk in place?  
Yes [ ] No [ ]

2.6.4. Do school curricula include information on chemicals risk?  
Yes [ ] No [ ]
3. Health sector participation in the implementation of multilateral international agreements

In table below, please, indicate health sector participation in international agreements’ implementation at national level

<table>
<thead>
<tr>
<th></th>
<th>IHR</th>
<th>SAICM</th>
<th>GHS**</th>
<th>Stockholm Convention</th>
<th>Rotterdam Convention</th>
<th>Basel Convention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agreement is officially approved in the country*</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Health sector plays leading role in implementation</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Health sector representative is a member of interministerial committee</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Contact point in health sector is appointed</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Health sector participates in policy, action programs/plans development and implementation</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Separate financial resources/funding mechanism for health sector activity is available</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Health sector doesn’t participate in the agreements’ implementation</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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</tr>
</tbody>
</table>

*Officially approved means that agreement is signed, ratified by country or country officially confirmed approval of non-binding international instrument

**GHS - Globally Harmonized System of Classification and Labeling of Chemicals

4. Chemical emergency preparedness, prevention and response

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>Partly</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is emergency preparedness and response plan in place?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>If yes, did health sector participate in the plan development?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Are IHR requirements included in the plan?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>If yes, is health sector involved in the response to emergency according to the plan?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>Partly</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health sector/institutions responsibilities are defined in relevant legislation</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Exposure scenario/modeling is included in the plan</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Poison center is implemented according to WHO recommendations</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Longterm epidemiological follow-up and exposure monitoring is in place and used</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Laboratory analysis can be provided for monitoring during incidents</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>incl. during first hour after incident</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Mobile laboratories are used for analysis for identification and quantification of chemicals</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Information exchange mechanism is in place</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>incl. during first hour after incident</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

For each item you checked “partly” additional information is appreciated
5. Management of carcinogens, mutagens, reproductive and endocrine disrupting, and bioaccumulative toxic substances

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>Partly</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are there specific requirements for handling those chemicals in legislation?</td>
<td></td>
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<tr>
<td>Is there a specific pre-marketing registration procedure for those chemicals implemented?</td>
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<tr>
<td>Are those chemicals defined as a priority for risk reduction measures implementation?</td>
<td></td>
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<tr>
<td>Is the requirement to use, where possible, less hazardous alternative an obligation?</td>
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<tr>
<td>Does health sector participate in evaluation of proposed alternatives?</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Is risk assessment of those chemicals conducted and results published?</td>
<td></td>
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<tr>
<td>Are vulnerable population groups defined and specific protective measures developed?</td>
<td></td>
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<tr>
<td>Is monitoring of media specific risk (water, air, soil, food, consumer products) in place?</td>
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<td></td>
</tr>
<tr>
<td>If yes, please, indicate media:</td>
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<td></td>
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<tr>
<td>Water</td>
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<tr>
<td>Air</td>
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<td>Soil</td>
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<tr>
<td>Food</td>
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<tr>
<td>Consumer products</td>
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<tr>
<td>Is human biomonitoring used for risk assessment?</td>
<td></td>
<td></td>
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<tr>
<td>Are national programs/ plans to reduce risk of those chemicals:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implemented</td>
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<td></td>
<td></td>
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<tr>
<td>Developed</td>
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<td></td>
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<tr>
<td>Planned to be developed</td>
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<td></td>
<td></td>
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<tr>
<td>Not planned to be developed</td>
<td></td>
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<tr>
<td>Is there a national program (e.g., law, by-law, strategy, action plan) for elimination of asbestos-related diseases developed?</td>
<td></td>
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<tr>
<td>Are research programs in chemical safety specifically funded?</td>
<td></td>
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</tbody>
</table>

For each item you checked “partly” additional information is appreciated

6. Contaminated sites management

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>Partly</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there a definition of “contaminated site” in the country?</td>
<td></td>
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<tr>
<td>Are contaminated sites identified in the country?</td>
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<tr>
<td>If “yes” or “partly”:</td>
<td></td>
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<tr>
<td>Was risk assessment used to define contaminated sites?</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Was biological monitoring used to define exposed population?</td>
<td></td>
<td></td>
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<tr>
<td>Was (is) cleaning up procedure implemented?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Is register of contaminated sites formed and publicly available?   Yes ☐ Partly ☐ No ☐

If “yes” or “partly”, please identify:

   Industrial contaminated sites:   Yes ☐ No ☐

   Obsolete pesticides and chemicals contaminated sites: Yes ☐ No ☐

   Toxic wastes contaminated sites: Yes ☐ No ☐

Is information of contaminated sites included in international (any) register?

  Yes ☐ No ☐

Additional information of needs, priorities is appreciated: