International Code of Conduct on the Distribution and Use of Pesticides

Regular monitoring report – 2008

FOOD AND AGRICULTURE ORGANIZATION
OF THE UNITED NATIONS

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The Inter-Organisation Programme for the Sound Management of Chemicals (IOMC) was established in 1995 following recommendations made by the 1992 UN Conference on Environment and Development to strengthen cooperation and increase international coordination in the field of chemical safety. The participating organizations are the Food and Agriculture Organization of the United Nations (FAO), the International Labour Organization (ILO), the Organisation for Economic Co-operation and Development (OECD), the United Nations Environment Programme (UNEP), the United Nations Industrial Development Organization (UNIDO), the United Nations Institute for Training and Research (UNITAR) and the World Health Organization (WHO). The World Bank and the United Nations Development Programme (UNDP) are observers. The purpose of the IOMC is to promote coordination of the policies and activities pursued by the participating organizations, jointly or separately, to achieve the sound management of chemicals in relation to human health and the environment.

This publication was developed in the IOMC context. The contents do not necessarily reflect the views or stated policies of individual IOMC participating organizations.

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1. Introduction

The revised *International Code of Conduct on the Distribution and Use of Pesticides* [1] (further referred to as the Code of Conduct) represents an updated, globally-accepted standard of conduct relating to the distribution and use of pesticides. Adopted in 2002, the revisions to the Code of Conduct have strengthened its guidance to reduce the adverse effects of pesticides on health and the environment and to support sustainable agricultural practices.

Among other changes, the revised Code of Conduct contains important new provisions on monitoring and observance. Under Article 12, all stakeholders are invited to monitor and report on implementation of the Code of Conduct. Other provisions call upon governments and industry to collect and report on various types of information relating to pesticides.

In 2006, FAO published the *Guidelines on Monitoring and Observance of the Code of Conduct* [2], which are designed to provide a user-friendly approach for governments and other stakeholders identified in Article 12, including NGOs, the pesticide industry, and other industries, to participate effectively in monitoring observance under the revised Code of Conduct. The guidelines identify information to be gathered, and ways to ensure that it will be used effectively to support further implementation of the Code of Conduct. Over time, data collected according to the guidelines will provide an ongoing source of information to evaluate progress in observing the Code of Conduct, and to highlight where further work is needed.

After the adoption of the original Code of Conduct in 1985, Governments were also invited to report on their efforts to implement it. In this context, FAO circulated two questionnaires, one in 1986, when the Code of Conduct had not yet been implemented, and the second in 1993. These early questionnaires were designed as "mirror images" of the Code of Conduct and yielded important information on the state of pesticide management in the 1980s and early 1990s. The results of both questionnaires were published by FAO [3, 4]. The analysis details trends by region, and records how technical cooperation programs and national regulatory systems have helped to implement the original Code of Conduct.

In the *Guidelines on Monitoring and Observance of the Code of Conduct* stakeholders are invited to monitor implementation of all articles and provisions of the Code of Conduct. However, it is recognized that monitoring can be resource intensive, and the collection of comprehensive and good quality data on all aspects of the Code of Conduct may initially be beyond the capacity of certain countries. Therefore, the guidelines recommend that priority be given to certain elements of the Code, based on the following criteria:

(i) importance to overall objectives of the Code of Conduct, especially on protection of health and the environment;

(ii) concerns highlighted in past questionnaires and recent experience in implementation;

(iii) ease of monitoring; and

(iv) contribution to a useful end-result data base to review trends over time.

Based on these criteria, specific provisions of the Code were identified and a questionnaire was designed to evaluate their implementation. This questionnaire is included in the *Guidelines on Monitoring and Observance of the Code of Conduct* as Annex A – Regular Monitoring Report.

The Regular Monitoring Report which was used for this assessment was therefore not identical to the questionnaires used for the previous evaluations. However, where possible, the results from the present assessment will be compared with the results from the previous questionnaires.

2. Procedure

To facilitate the assessment, the *Guidelines on monitoring and observance of the Code of Conduct* were translated into French and Spanish in early 2008. Annex A of the Guidelines, the *Regular monitoring report*, was also published in electronic format on the FAO web site (see Annex 3).

Subsequently, in July 2008, the guidelines were then sent to all 193 FAO members (191 member nations, 1 associate member and 1 member organization) with the request to complete Annex A – *Regular monitoring report*. The request was sent to FAO official contact points (generally ministries responsible for agriculture), but since pesticide management as addressed by the Code of Conduct also concerns activities beyond the field of agriculture, respondents were explicitly invited to obtain inputs from other relevant government offices, in particular those responsible for public health, environment, industry and trade.

National FAO Representations were asked to follow-up on the questionnaire with the FAO official contact points. The initial response period of 3 months was extended with one month to allow more time for submitting the questionnaire. A limited number of responses received beyond that extended deadline were also included in the assessment.

3. Evaluation of responses

As indicated above, the questions in the first two questionnaires mirrored the articles in the Code of Conduct. This was not the case for the present questionnaire, which makes direct comparisons between the three assessments difficult.

Also, the responses to the previous two questionnaires were classified according to "FAO regions", and distinguished between developed and developing countries. However, the composition of the FAO regions has considerably changed over time (Annex 2), and the definition of what constituted a developed or developing country was not clear from the previous questionnaires, which further complicates direct comparisons between the three studies.

Therefore, it was chosen to analyse the results of the questionnaire on the basis of country income groups as defined by the World Bank. The rationale behind this is that it can be expected that the degree to which pesticide management in a country positively responds to the provisions of the Code of Conduct will to a large extend be determined by available financial and human resources. The World Bank income groups used in this assessment are shown in Table 1.

Table 1. Country income groups as defined by the World Bank, based on 2007 Gross National Income (GNI)[1].

Country income group	Gross national income ($ US)
Low income	$935 or less
Lower middle income	$936 – $3 705
Upper middle income	$3 706 – $11 455
High income	$11 456 or more

[1] Country classification by income group as posted on the World Bank Web site in April 2009.

The description of the results below follows the outline of the questionnaire. The results for a limited number of questions are not presented in this report because response rates were too low for a meaningful evaluation (generally when less than half of the countries responded).

4. Results

4.1 Background information

In total, 39 nations, and the European Commission, replied to the questionnaire, out of 193 members1, which is an overall response rate of 21%. The list of responding nations is provided in Annex 1. Both previous questionnaires yielded a significantly higher response: 75% of countries responded in 1986 and 57% in 1993 (Annex 2).

The responses to the questionnaire per FAO Region2 are shown in Figure 1. The highest response rate was for Northern America, but this region only consists of the USA and Canada. A relatively high response rate is also noted for Latin America and the Caribbean. No responses were received from the South West Pacific region. Africa and the Near East also responded below the overall average.

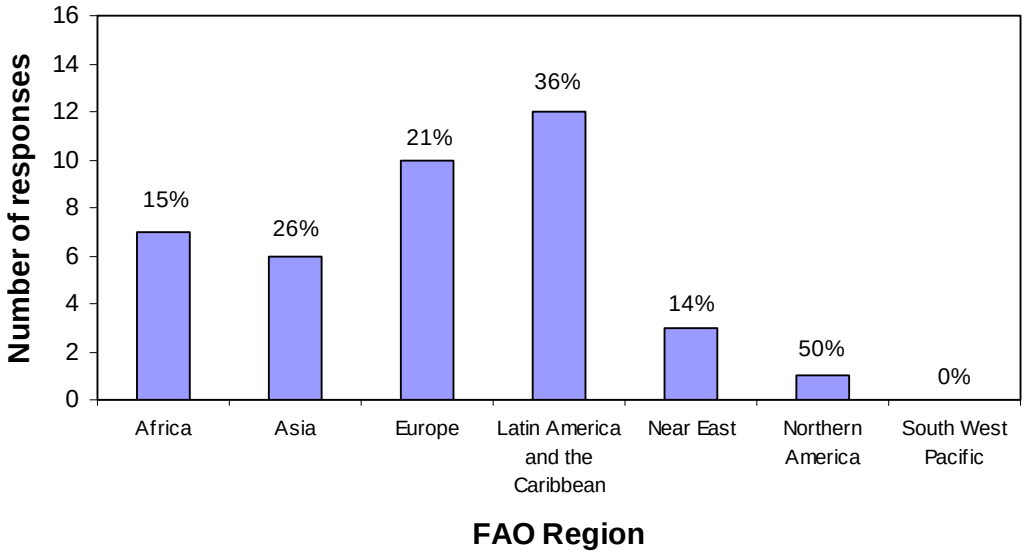

Figure 1. Number of responses to the International Code of Conduct regular monitoring report per FAO region (bars), and the percentage of the member nations in each region which replied (total number of FAO member nations is 191).

[1] FAO presently has 191 member nations, one associate member, and one member organization (the EU).

[2] The list of FAO Member Nations, according to the 7 geographical regions used for internal administrative purposes, can be viewed at: http://www.fao.org/unfao/govbodies/membernations_reg_en.asp

There was a fairly even distribution of the responses by income group of the countries, as defined by the World Bank (Figure 2). Nineteen responding countries fall in the low or lower middle income groups, and the other 20 in the upper middle and high income groups.

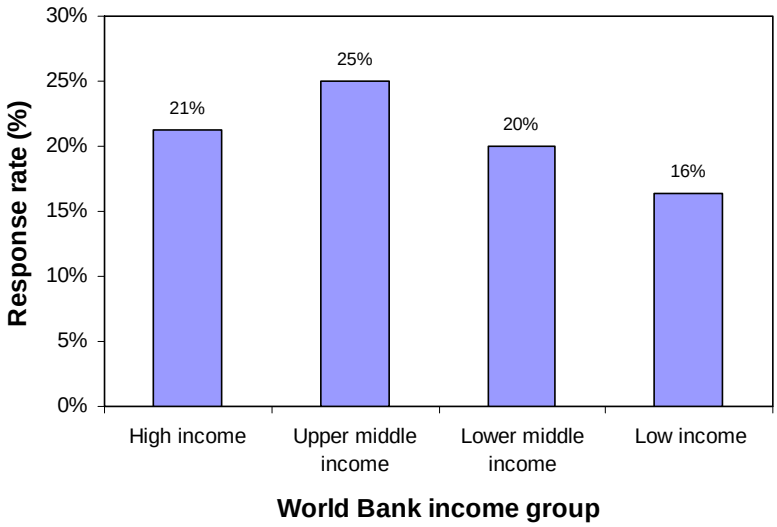

Figure 2. Response rate to the regular monitoring report per income group of the country according to the World Bank (total number of responses is 39).

Of the responding government entities, almost all regulate agricultural pesticides. Veterinary pesticide are regulated by about 40% of the responding entities, while household and public health pesticides are only regulated by a third of the respondents (Figure 3). However, a certain sampling bias is likely, because the primary addressee for the request to submit a monitoring report was the ministry responsible for agriculture. Indeed, in 90% of the cases, government entities responsible for, or active in, agriculture responded. Only three respondents were primarily responsible for health or labour, and one respondent was a fully inter-ministerial agency.

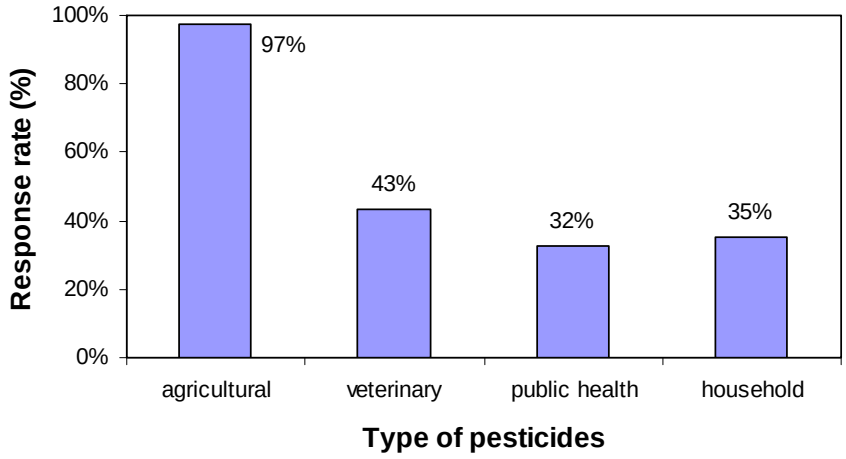

Figure 3. Percentage of respondents which are regulating different types of pesticides (total number of responses is 37).

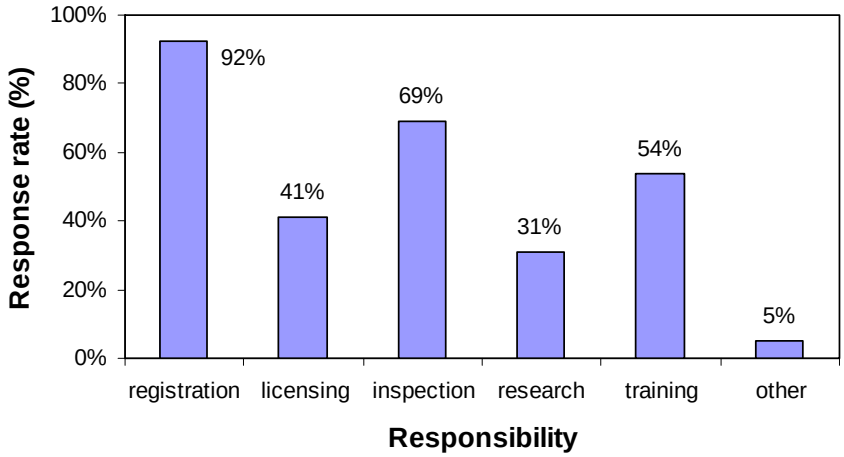

Figure 4. Responsibilities of the respondents with respect to pesticide management (total number of responses is 39).

Almost all of the responding entities were responsible for the registration of pesticides, with many also involved in inspection and training (Figure 4).

4.2 Pest management

This section requested information relevant to Articles 3.7 and 3.11 of the Code of Conduct.

Integrated pest management (IPM) was considered a high priority in terms of the overall agricultural policy for 87% of the respondents. Sixty percent of the respondents had declared a specific IPM policy, while 57% operated a national IPM programme. IPM is specifically mentioned in other agricultural policy documents, including laws and regulations, in 82% of the countries.

Overall, approximately half of the countries responded that they had been fully or to a large degree successful in promoting the use of IPM. However, there was a distinct difference in the responses from upper middle and high income countries when compared to low or lower middle income ones, with about 70% of latter considering that they had no success or only to a small degree (Figure 5).

In 1993, 45% of developing countries responded that IPM was still at an early stage of development [4]. This suggests that little progress has been made with the development and implementation of IPM in many developing countries.

About three-quarters of the low and lower middle income countries responded that lending institutions and donor agencies had provided only little support to national IPM practices and improved IPM concepts. Insufficient support for IPM was mentioned by about half of the upper middle and high income countries.

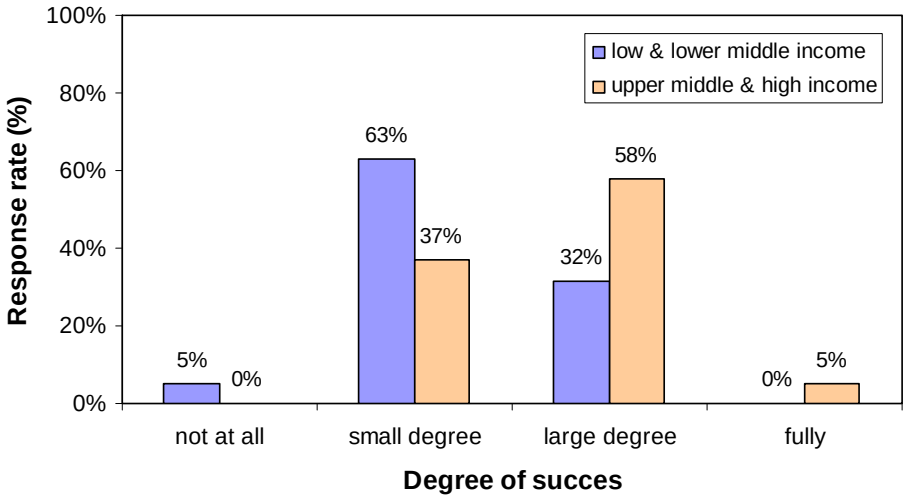

Figure 5. Degree of success in promoting integrated pest management as a function of the income group of the country (total number of respondents is 38).

Approximately 60% of the responding countries indicated that they experience significant problems with pest resistance in agriculture, while about 50% did so in public health. There was little difference between countries of different income groups. However, on average only 13% of low and lower middle income countries considered that they had sufficient resources and expertise to address problems with pest resistance, while 60% of the upper middle and high income countries did so (Figure 6).

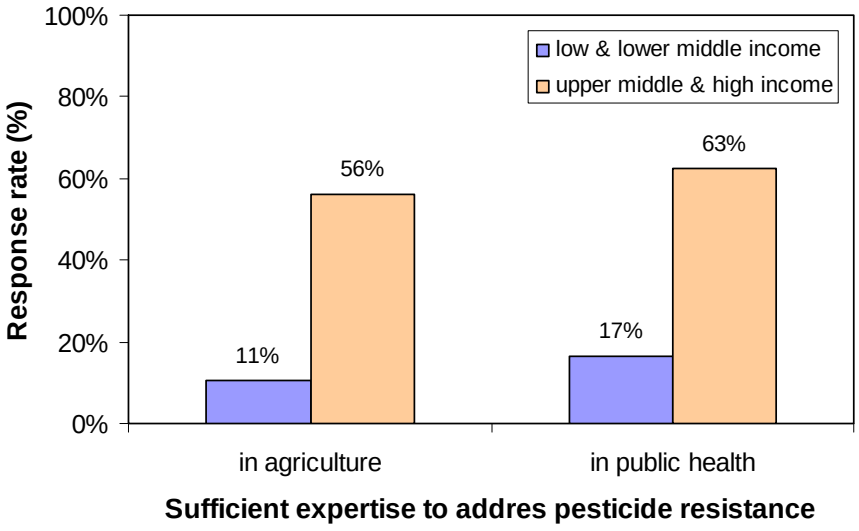

Figure 6. Percentage of respondents indicating that they have sufficient resources and expertise to address problems with pesticide resistance, as a function of the income group of the country (total number of respondents is 35 for agriculture and 20 for public health).

In 1993, 55% percent of developing countries indicated that no steps had been taken to elaborate strategies to reduce the development of resistant species [4]. The response to the present questionnaire suggests that little progress has been made in this respect.

4.3 Testing, quality control and effects in the field

This section requested information relevant to Articles 4.2, 4.4 and 4.5 of the Code of Conduct.

Overall, slightly less than half of the respondents indicated that they experience significant problems or concerns about the quality of pesticides offered for sale in their country. A considerable difference existed between income groups, however. While 68% of low and lower middle income countries noted problems with pesticide quality, this was the case in only 22% of the upper middle and high income countries (Figure 7).

In 1993, 62% of developing countries and 18% of developed countries responded that quality of the pesticide marketed was not the same as that cleared for registration [4]. This is very similar to the present response, suggesting that the fraction of substandard pesticides on the market has not decreased over the last 15 years.

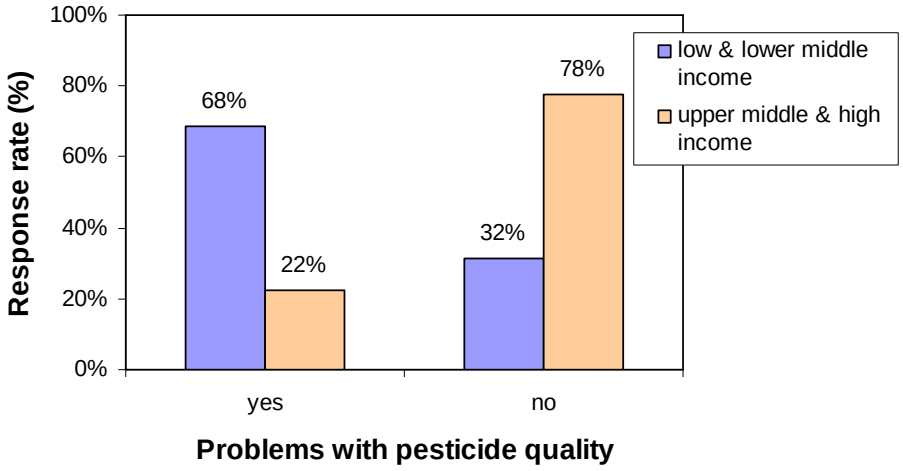

Figure 7. Fraction of responding countries having significant problems or concerns about the quality of pesticides offered for sale, as a function of the income group of the country (total number of respondents is 37)

Countries were asked to what extent they possessed or had access to facilities needed to verify and exercise control over the quality of pesticides. Of the low and lower middle income countries, 64% responded they had no, or only to a small degree, access to such facilities. This was contrary to upper middle and high income countries, of which 80% did have full or to a large degree access to pesticide quality control (Figure 8).

In 1993, 30% of developing countries and none of the developed countries responded that they lacked facilities for verifying the quality of pesticides offered for sale [4]. The response to the present questionnaire appears to indicate that access to pesticide quality control laboratories, in particular in lower income countries, has considerably worsened.

Almost 80% of the upper middle and high income countries indicated that national legislation required pesticides to conform to relevant FAO or WHO quality specifications, when available. This was even higher (94%) in low or lower middle income countries.

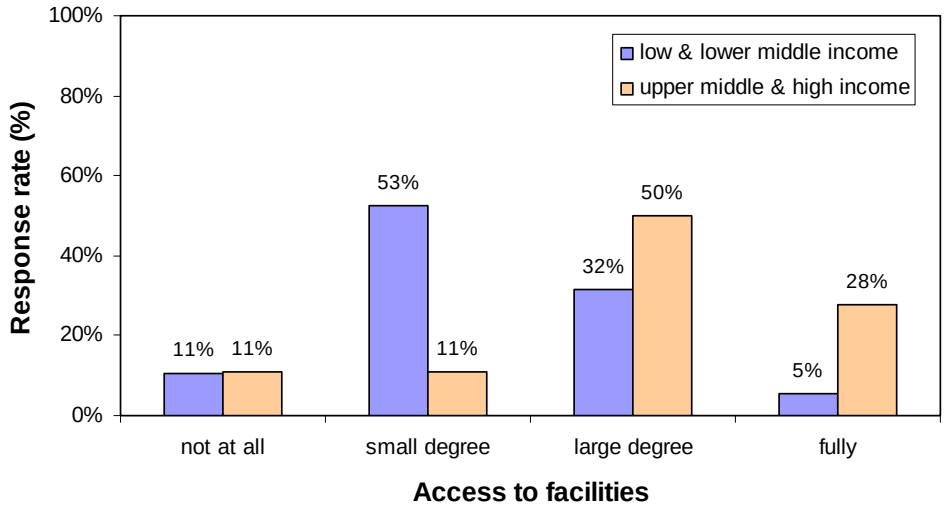

Figure 8. Degree of access to pesticide quality control facilities, as a function of the income group of the country (total number of respondents is 38).

About 40% of the low and lower middle income countries received training from pesticide exporting countries in trial design and conduct, the interpretation and evaluation of test data, and risk/benefit analysis. This is slightly lower than in 1993, when 47% of developing countries indicated that they received such assistance.

Overall, only about a quarter of respondents replied that they had taken actions to collaborate with pesticide industry and with other governments in post-registration surveillance or in conducting monitoring studies to determine the fate of pesticides and their health and environmental effects under field conditions. There was relatively little difference in this respect between higher and lower income countries (Figure 9).

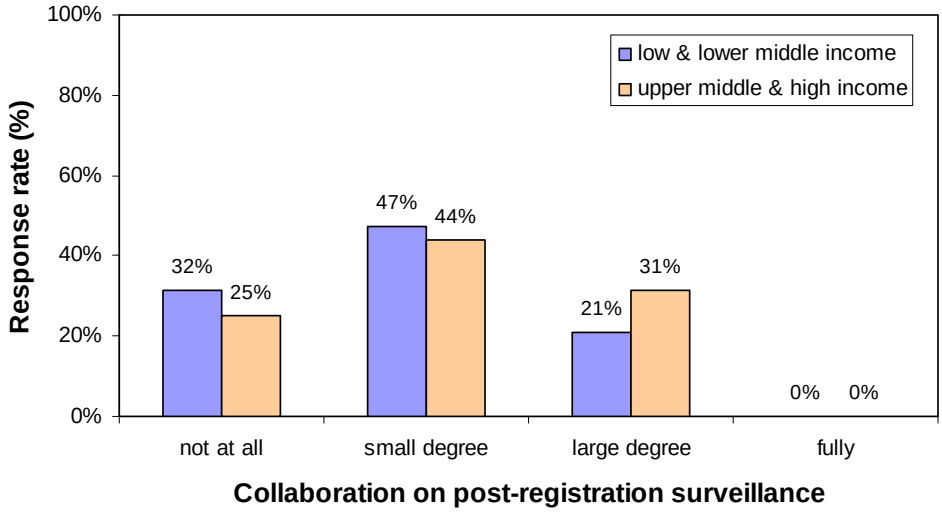

Figure 9. Extent to which governments have taken action with pesticide industry or other governments in post-registration health or environmental surveillance, as a function of the income group of the country (total number of respondents is 35).

4.4 Health and environmental information

This section requested information relevant to Articles 5.1.3, 5.1.5, 5.1.9 and 5.1.10 of the Code of Conduct.

About a third of the upper middle and high income countries conducts surveys on occupational exposure to pesticides on a regular basis, while this was only the case in 16% of the low and lower middle income countries (Figure 10). About a quarter of all countries did not carry out such surveys at all, or very rarely, without a clear distinction between income groups.

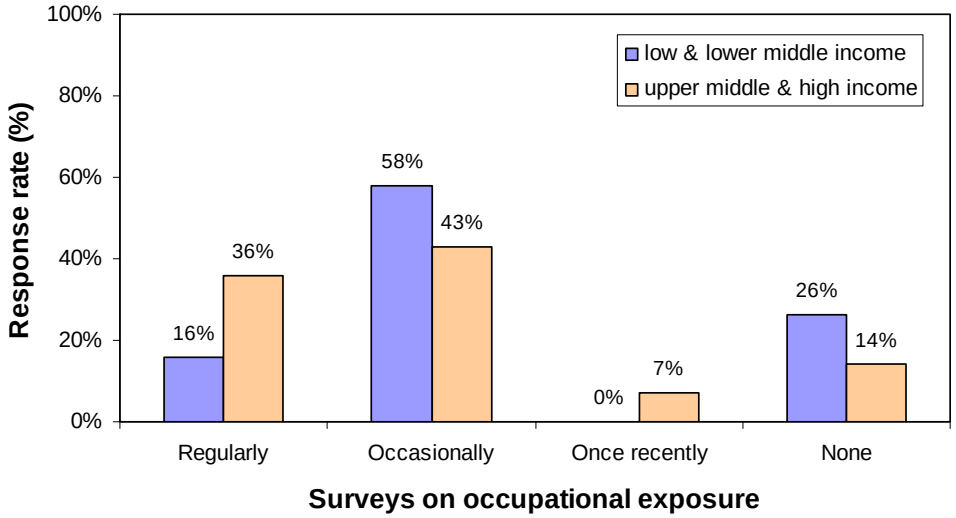

Figure 10. Extent to which governments carry out surveys on occupational exposure to pesticides, as a function of the income group of the country (total number of respondents is 33).

Most countries document cases of pesticide poisoning. This is done in 94% of the upper middle and high income countries, against 78% of the low and lower middle income countries (Figure 11).

Poison control centres or facilities have been established by 34% of the responding countries. There was little difference in this respect between higher and lower income countries. This is a slight improvement compared to the 1993 questionnaire, when 24% of developing countries indicated that they had a poison control centre [4].

Medical assistance where pesticide poisoning may occur, however, was readily available in only about half of the low and lower middle income countries. In contrast, this was the case in 87% of upper middle and high income countries (Figure 11).

With respect to environmental contamination and incidents due to pesticides, about a third of the countries reported that they have experienced significant incidents of pesticide contamination to the environment during the last three years. There was little difference in this respect between higher and lower income countries (Figure 12). However, 74% of the low and lower middle income countries responded that they had significant problems or concerns of environmental contamination from pesticides, against 44% of the upper middle and high income countries.

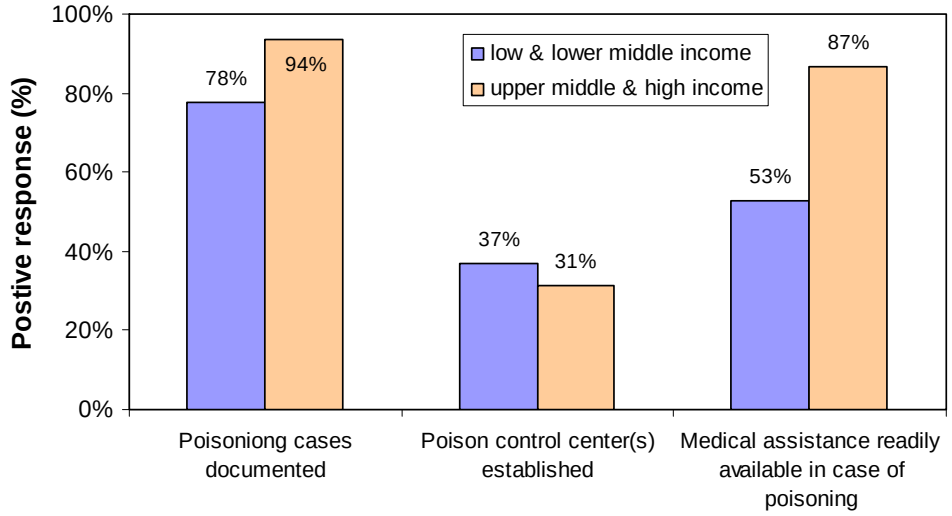

Figure 11. Fraction of the countries that responded positively that they document poisoning cases, that poison control centres or facilities have been established, and that medical assistance is readily available where pesticide poisoning may occur, as a function of the income group of the country (total number of respondents is 34).

Only 12% of the low and lower middle income countries had established programmes to collect data on environmental contamination and specific incidents relating to pesticides. In contrast, 60% of the upper middle and high income countries had established such programmes (Figure 12).

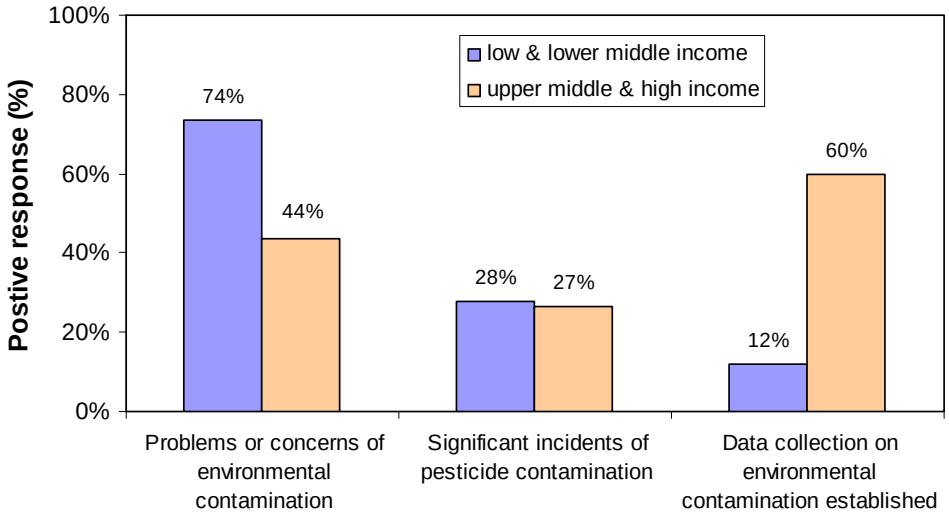

Figure 12. Fraction of the countries that responded positively that they have problems or concerns of environmental contamination from pesticides, that significant incidents of environmental contamination by pesticides have occurred in the last 3 years, and that data are collected on environmental contamination and incidents, as a function of the income group of the country (total number of respondents is 35, 33, 32 respectively).

No improvement has occurred in this respect in developing countries, as in 1993 89% of them responded that the fate and effect of pesticides on the environment were not or only partly studied [4]. In contrast, higher income countries appear to have strengthened environmental monitoring, with countries collecting these data up from 35% in 1993 to 60% in 2008.

Almost 90% of the upper middle and high income countries reported that national maximum residue limits (MRLs) for food and feed items have been established, against only 37% of the low and lower middle income countries. A national system to monitor pesticide residues in food and feed is in place in 89% of the upper middle and higher income countries, and for residue monitoring in the environment in 75% of these countries. Only a fifth of the low and lower middle income countries have such a system either for food/feed or the environment (Figure 13).

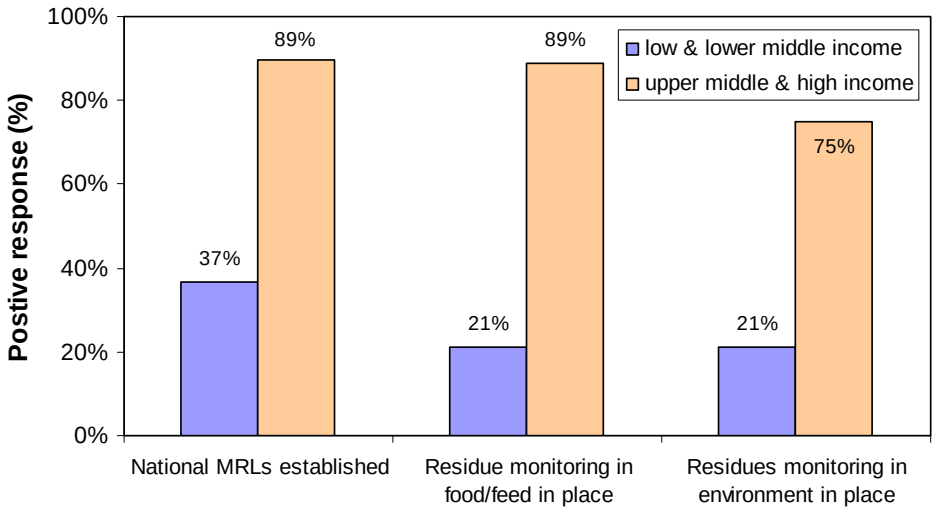

Figure 13. Fraction of the countries that responded positively that they have established national MRLs, have a system to monitor residues in food and feed, or have a system to monitor residues in the environment, as a function of the income group of the country (total number of respondents is 38, 37, 35 respectively).

4.5 Trends in manufacture, use and trade

This section requested information relevant to Articles 6.1.8 and 6.1.10 of the Code of Conduct.

Countries were requested to indicate whether they had established and applied methods to collect and record data on various stages of manufacture, use and trade. Almost all countries collect data on pesticide imports. Data on pesticide quality are collected by 58% of the low and lower middle income countries, and 47% of the upper middle and high income countries. Pesticide use statistics are collected by about three quarters of the low and lower middle income countries, against roughly half of the upper middle and high income countries (Figure 14).

In 1993, only 65% of developing countries collected and recorded data on import, local formulation and use of pesticides [4]. Therefore, data collection on pesticide import and use appears to have improved considerably in developing countries over the last 15 years.

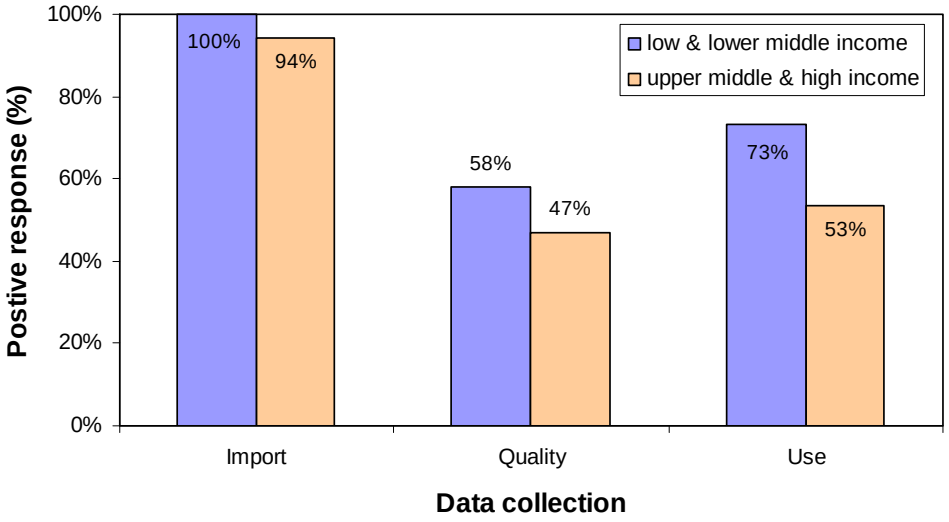

Figure 14. Fraction of the countries that responded positively that they collect and record data on pesticide imports, pesticide quality and pesticide use (total number of respondents is 37, 36, 35 respectively).

Sixty-three percent of low and lower middle income countries consider that there are or might be significant problems of illegal import of pesticides, against 29% of the responding upper middle and high income countries. Of the former group of countries, 95% have established methods to control illegal trade in pesticides while this is the case in 73% of the latter (Figure 15).

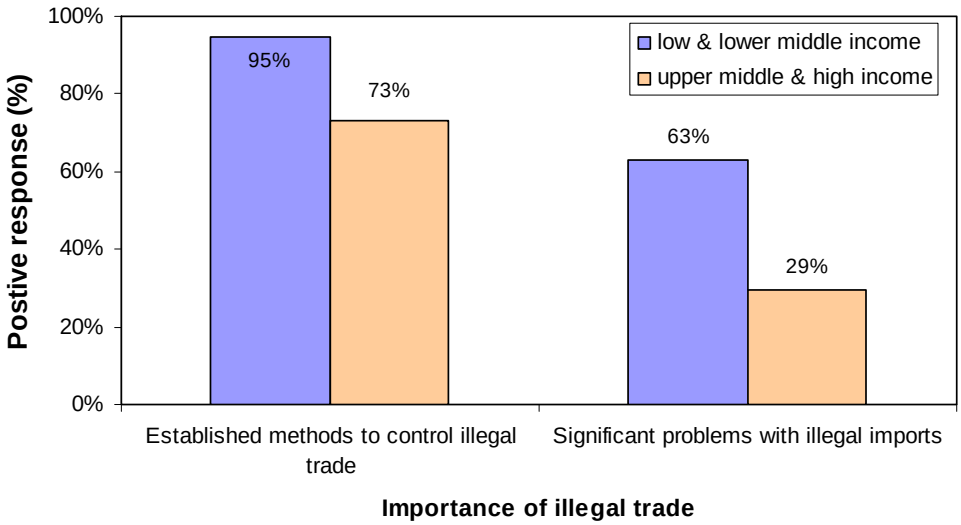

Figure 15. Fraction of the countries that responded positively that they consider there are of might be significant problems of illegal import of pesticides in their country, and that they have established methods to control such trade (total number of respondents is 36 and 34 respectively).

4.6 Selected standards of conduct

This section requested information relevant to certain standards of conduct set forth in Articles 5.6 and 7 of the Code of Conduct, as well as Articles 10 and 11.

Countries were asked to describe the extent to which the pesticide industry has made efforts to reduce risks from pesticides in various respects.

Between 80 and 95% of countries considered that industry had ensured clear and concise labelling of pesticides (Figure 16d), and there was little difference between lower and higher income groups in this respect.

In 1993, about 45% of developing countries and 10% of developed countries indicated that labelling was sometimes or generally not clear and concise [4]. It appears therefore that, in particular in developing countries, the quality of labelling has greatly improved over the last 15 years.

There was relatively little difference between income groups of countries regarding risk reduction by industry through introducing ready-to-use packages. Fifty-eight percent of the upper and high income groups considered that industry had achieved this fully or to a large degree, while this was the case for 45% of the low and lower middle income groups (Figure 16b).

On the other hand, about 80% of the low and lower middle income countries considered that industry had not made sufficient efforts to reduce risks by making less toxic formulations available (Figure 16a). In upper middle and high income countries this was 35%, so there is a distinct difference between income groups.

In 1993, almost 40% of developing countries and 35% of developed countries responded that efforts were not, or only sometimes, made by industry to provide less hazardous formulations [4]. While this is similar to the present questionnaire for the higher income countries, the situation seems to have deteriorated in developing countries.

A similar difference between income groups is seen regarding risk reduction by using containers which are not attractive to or easily opened by children, in particular for domestic use products. Three quarters of the upper middle and high income countries considered that industry had done this fully or to a large degree. In contrast, only a third of the lower middle and low income countries were of this opinion (Figure 16c).

When requested whether industry had made efforts to reduce risks from pesticides through developing application methods and equipment that minimize exposure to pesticides, about 70% of low and lower middle income countries responded that this had not been the case, or only to a small degree. On the other hand, 60% of the upper middle and high income countries responded that industry done so to a large extent (Figure 17).

Governments were also asked whether pesticide industry had taken voluntary corrective action when problems occurred in the country, and helped find solutions when governments requested so. The large majority (93%) of upper middle and high income countries responded positively to this question. However, only 53% of the low and lower middle income countries considered that industry had done so.

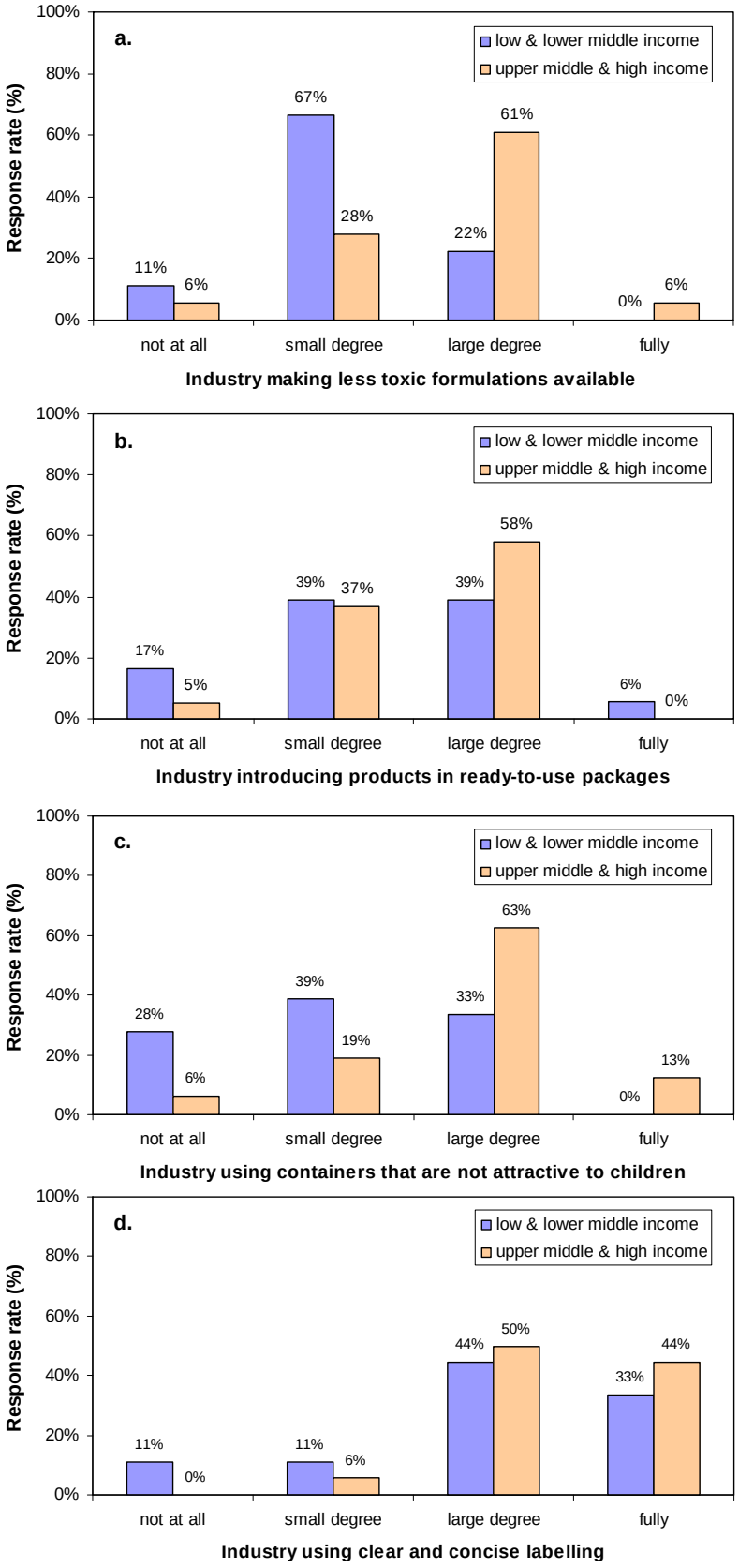

Figure 16. Extent to which pesticide industry is considered to have made efforts to reduce risks from pesticides through: a) making less toxic formulations available; b) introducing products in ready-to-use packages; c) using containers that are not attractive to children; d) using clear and concise labelling (number of respondents is 36, 37, 34 and 36 respectively)

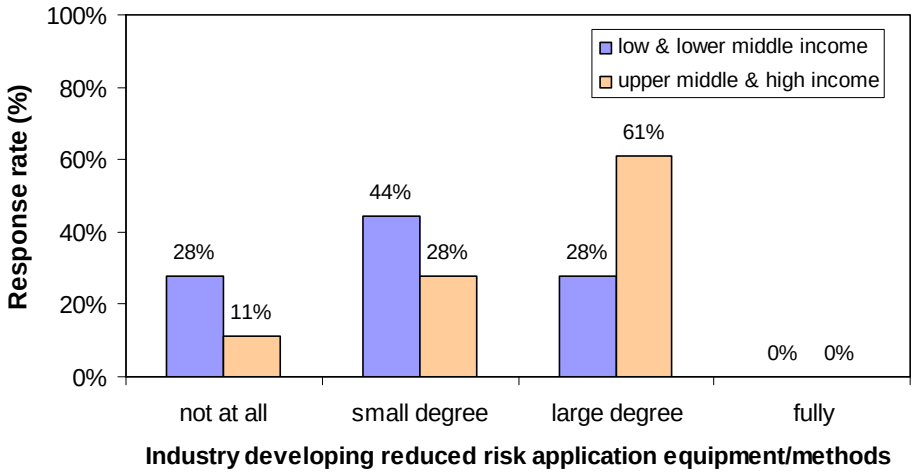

Figure 17. Extent to which industry is considered to have made efforts to reduce risks from pesticides through developing application methods and equipment that minimize exposure to pesticides (number of respondents is 36)

Respondents were asked whether the government, alone and/or in cooperation with pesticide industry, had undertaken cooperative actions to further reduce risks in several areas.

The large majority of countries considered that actions had been undertaken to promote the use of proper and affordable personal protective equipment (PPE), and by making provisions for safe storage of pesticides at both warehouse and farm level. In upper middle and high income countries this was considered to have been achieved to a slightly higher extent than in low and lower middle income countries (Figure 18).

In 1993, 48% of developing countries still responded that pesticides were stored improperly and unsafely, suggesting that progress has been made in this respect [4]

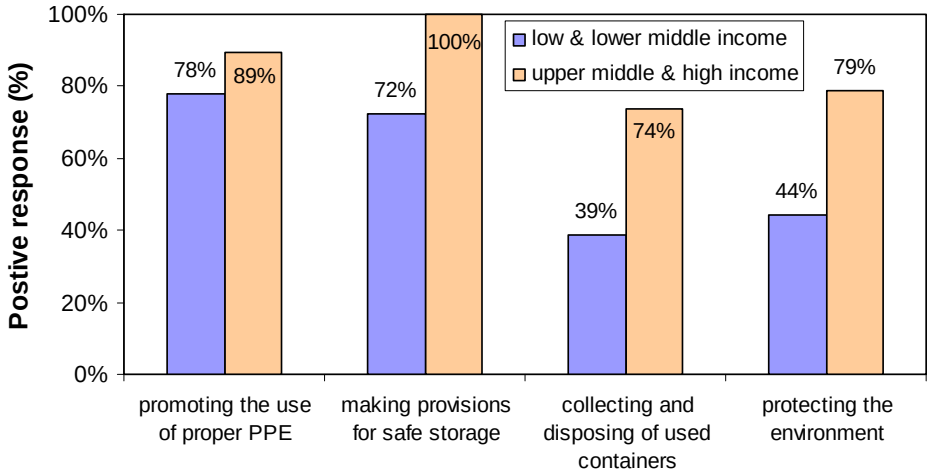

Figure 18. Fraction of the countries that responded positively that the government alone and/or in cooperation with pesticide industry, was taking actions to reduce risks by promoting the use of proper PPE, making provision for safe storage, establishing services to collect and safely dispose of used containers and left-over pesticides, and protecting biodiversity and minimizing adverse effects of pesticides on the environment (total number of respondents is 37).

About three quarters of the upper middle and high income countries responded that governments and/or industry had succeeded in establishing services to collect and safely dispose of used containers and small quantities of left-over pesticides. In contrast, only 39% of the low and lower middle income countries considered this had been done effectively (Figure 18).

In 1993, 66% of developing countries indicated that disposal of pesticides and empty containers posed a persistent problem, while this was the case for 27% of developed countries [4]. This suggests that only limited progress has been made in this respect, both in developed and developing countries.

Only 44% of low and lower middle income countries responded that their governments and/or industry had undertaken actions to protect biodiversity and minimize adverse effects of pesticides on the environment and on non-target organisms. In contrast, almost 80% of the upper middle and high income countries responded positively to that question (Figure 18).

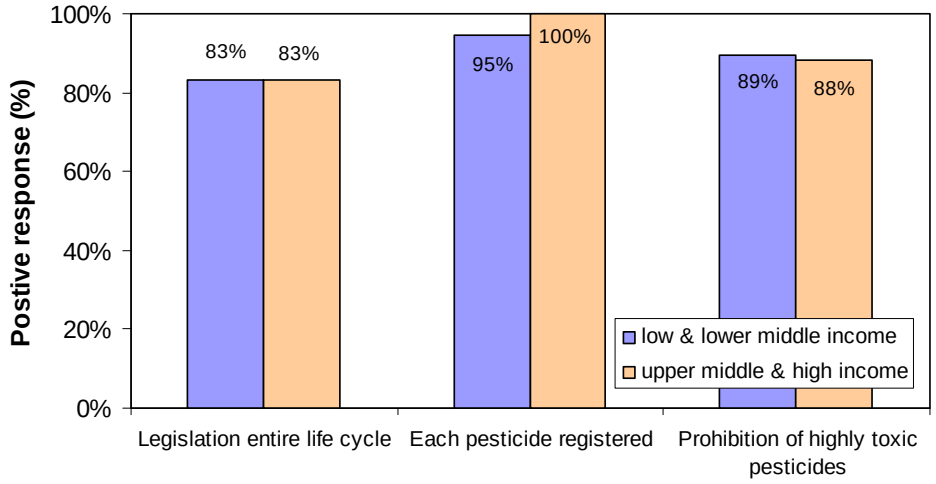

Figure 19. Fraction of the countries that responded positively that they have introduced legislation for the regulation of the entire life-cycle of pesticides, have ensured that each pesticide product is registered, and that highly toxic and hazardous products have been prohibited (total number of respondents is 36, 39, 36 respectively).

Respondents were also requested whether their governments had introduced the necessary legislation for the regulation of pesticides covering their entire life-cycle and had made provisions for its effective enforcement. The majority of countries (83%) responded positively to this question, irrespective of income group (Figure 19). This is quite similar to the response to 1993 questionnaire [4].

All upper middle and high income countries confirmed that a system was in place to ensure that each pesticide product is registered before it can be made available for use. This was also the case for 95% of the low and lower middle income countries (Figure 19).

Almost 90% of the respondents indicated that their government prohibits the importation, sale and use of highly toxic and hazardous products, such as those included in WHO classes Ia and Ib, in the light of Article 7.5 which indicates that such prohibitions may be desirable if other control measures or good marketing practices are insufficient to ensure that the product can be handled with acceptable risk to the used. There was no difference between lower and higher income countries in this respect (Figure 19).

This appears to be a slight improvement compared to 1993, when 80% of developing countries indicated that the prohibition of importation, sale and purchase of extremely toxic products could be enforced.

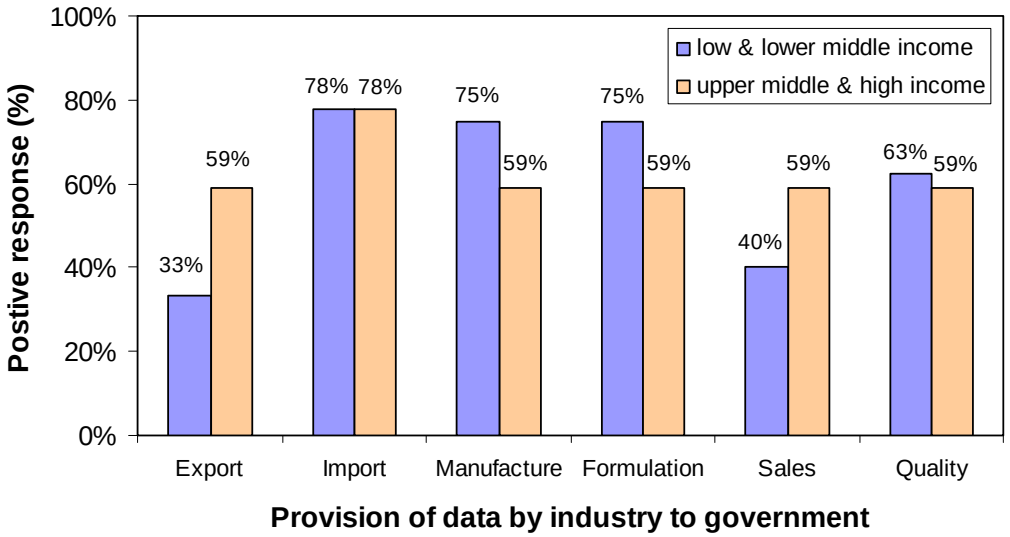

Figure 20. Fraction of the countries that responded positively that pesticide industry had provided the national government with clear and concise data on various stages of the pesticide life cycle (total number of respondents is 29, 36, 33, 32, 33, 33 respectively).

Respondents were requested to indicate whether pesticide industry provided governments with clear and concise data on various stages of the pesticide life cycle. About 80% of countries responded that import data were provided, irrespective of country income group (Figure 20). Data on pesticide quality were provided to about 60% of countries, again irrespective of income group. Sales data, however, were provided to 60% of the upper middle and high income countries, but only to 40% of the low and lower middle income countries. Responses on pesticide manufacture, formulation and export are difficult to interpret, since it is not know in which of the responding countries such activities are effectively carried out.

When requested whether pesticide industry ensures that active ingredients and formulated products conform to relevant FAO and WHO specifications, 70% of the countries responded positively. There was relatively little difference between country income groups.

4.7 General input on observance of the Code of Conduct

This section of the questionnaire allowed respondents to identify areas of the Code of Conduct of particular importance to the country, and to highlight any problems relating to pesticides that merit attention. Two questions were asked.

The first question invited respondents to identify provisions of the Code of Conduct which are considered especially important at the national level.

Fifteen out of 39 countries responded to this question, none of which were high income countries. Almost all the articles of the Code of Conduct were mentioned, although some were indicated by various respondents as being of particular importance. The following articles were mentioned by at least 3 respondents:

- article 3.7 (promotion of IPM);
- various provisions of article 4 (testing of pesticides);
- various provisions of article 5 (reducing health and environmental risks);
- some provisions of article 6 (regulatory and technical requirements);
- article 9 (information exchange);
- article 10 (labelling, packaging, storage and disposal).

The second question invited respondents to identify in which areas covered by the Code of Conduct they encounter the most significant problems to achieve full observance. Respondents were asked to identify strengths and weaknesses in the present national pesticide management systems, priorities for strengthening pesticide management, and areas where FAO could provide assistance.

Eighteen out of the 39 countries took the opportunity to respond to these questions, most of which again were low and lower middle income countries. A large variety of issues were identified, but several were mentioned repeatedly:

More than 70% of the respondents to this question indicated that an important strength regarding pesticide management in their country was the existence of rather complete legal frameworks for pesticide registration, control and other facets of pesticide management. A few countries mentioned, however, that the full life cycle of a pesticide was not yet entirely covered by the legislation.

Major weaknesses for sound pesticide management that were repeatedly mentioned include:

- insufficient enforcement of legislation, and lack of inspection and control services;
- lack of post-registration monitoring of health, environmental and residue aspects;
- absence of laboratory infrastructure for pesticide quality control and residue analysis;
- insufficient human resources and/or lack of technical capacity of staff.

Priorities identified for strengthening, and for which FAO might provide assistance were:

- capacity building of staff involved in pesticide registration, inspection and analysis;
- awareness raising of stakeholders;
- establishment up post-registration monitoring systems;
- establishment of laboratory facilities for pesticide quality control and residue analysis;
- management of obsolete pesticide stocks and empty pesticide containers;
- development and promotion of IPM.

5. Conclusions

The overall response rate to the present questionnaire of 21% was low, and considerably less than for the previous two questionnaires. As a result of this low response rate, a certain bias in the results of the present questionnaire cannot be excluded. For instance, relatively small differences in responses between incomes groups, or between questionnaires, have a higher likelihood of being due to chance and should therefore be interpreted with care.

In spite of the explicit request to respondents to implicate all government entities responsible for pesticide management in the country in the completion of the questionnaire, this appears not to have succeeded. Based on the responsibilities of the respondents, and the actual responses provided, the results of the questionnaire to a large extent refer to agricultural pesticides and to a much lesser extent to other pesticide uses.

Finally, it important to realize that the questionnaire generally invited respondents to provide opinions and considerations. No statistics or data have been collected to support these views. There is no reason to believe that these replies are somehow biased in a systematic way. However, it cannot be excluded either that apparent changes in responses over time (i.e. between questionnaires) have been affected by an increased awareness of the respondents with respect to potential problems and constraints related to pesticide management.

In spite of these limitations, a number of general conclusions can be drawn regarding the results of the questionnaire.

- There appears to be a very clear gap in the effective implementation of many provision of the International Code of Conduct between lower income (or developing) countries and higher income (or developed) countries, with lower income countries still lagging behind considerably.
- Since 1993, progress in strengthening pesticide management in lower income countries appears to have been made in some areas, including the establishment of poison control facilities, data collection on pesticide import and control, pesticide labelling and storage.
- However, little progress appears to have been made over the last 15 years in other, very important, areas of sound pesticide management in lower income countries, such as: effective implementation of IPM and resistance management, pesticide quality, access to quality control facilities, availability of less hazardous products on the market, collection and disposal of empty pesticide containers, or post-registration health and environmental monitoring.
- There seems to be a remarkable convergence of opinion, across regions, with respect to priority areas for strengthening of pesticide management in lower income countries. These include: capacity building of staff, establishment of post-registration monitoring systems and laboratory facilities, management of obsolete pesticides and empty containers, the development and promotion of IPM, awareness raising of stakeholders.

References

[1] **FAO (2002)** International Code of Conduct on the distribution and use of pesticides – revised version. Adopted by the 123rd Session of the FAO Council in November 2002. Food and Agriculture Organization of the United Nations, Rome. [http://www.fao.org/agriculture/crops/core-themes/theme/pests/pm/code/en/]

[2] **FAO (2006)** Guidelines on monitoring and observance of the Code of Conduct. Food and Agriculture Organization of the United Nations, Rome. [http://www.fao.org/agriculture/crops/core-themes/theme/pests/pm/code/frame/monitor/en/]

[3] **FAO (1993)** Analysis of government responses to the first questionnaire on the International Code of Conduct on the distribution and use of pesticides. Food and Agriculture Organization of the United Nations, Rome.

[4] **FAO (1996)** Analysis of government responses to the second questionnaire on state of implementation the International Code of Conduct on the distribution and use of pesticides. Food and Agriculture Organization of the United Nations, Rome.

[5] **FAO (2006)** The state of food and agriculture 2006. Food and Agriculture Organization of the United Nations, Rome. [http://www.fao.org/docrep/009/a0800e/a0800e00.htm]

Annex 1 – Countries responding to the 2008 questionnaire on the implementation of the International Code of Conduct on the distribution and use of pesticides.

Country	Type of responding entity[1]	FAO Region[2]	World Bank income group[3]
Argentina	Ag	LC	UMI
Austria	Ag	EU	HI
Belgium	He	EU	HI
Bolivia	Ag	LC	LMI
Burundi	Ag	AF	LI
Canada	He	NA	HI
Chile	Ag	LC	UMI
China	Ag	AS	LMI
Colombia	Ag	LC	LMI
Costa Rica	Ag	LC	UMI
Croatia	Ag	EU	UMI
Cyprus	Ag	EU	HI
Czech Republic	Ag	EU	HI
Dominican Republic	Ag	LC	LMI
Ecuador	Ag	LC	LMI
El Salvador	Ag	LC	LMI
Ethiopia	Ag	AF	LI
European Commission			
Finland	Ag	EU	HI
Guatemala	Ag	LC	LMI
Guinea	Ag	AF	LI
Japan	Ag	AS	HI
Madagascar	Ag	AF	LI
Malawi	Ag	AF	LI
Malaysia	Ag	AS	UMI
Mauritania	Ag	AF	LI
Mauritius	La	AF	UMI
Mexico	Ag	LC	UMI
Norway	Int	EU	HI
Peru	Ag	LC	LMI
Romania	Ag	EU	UMI
Saudi Arabia	Ag	NE	HI

Country	Type of responding entity[1]	FAO Region[2]	World Bank income group[3]
Sri Lanka	Ag	AS	LMI
Suriname	Ag	LC	UMI
Sweden	Ag	EU	HI
Syria	Ag	NE	LMI
Thailand	Ag	AS	LMI
Turkey	Ag	EU	UMI
Vietnam	Ag	AS	LI
Yemen	Ag	NE	LI

[1] Type of responding entity: Ag = responsible for agriculture; He = responsible for public health; La = responsible for labour; Int = inter-ministerial.

[2] FAO Regions: AF = Africa; AS = Asia; EU = Europe; LC = Latin America and the Caribbean; NE = Near East; NA = North America

[3] World Bank income group: LI = Low income; LMI = Lower middle income; UMI = upper middle income; HI = high income

Annex 2 – Comparison of the replies to the three questionnaires carried out by FAO on the implementation of the International Code of Conduct on the distribution and use of pesticides, in 1986, 1993, and 2008.

Region [1]	**Number of countries to which questionnaire was sent**						**Percentage of countries that responded**					
	1st (1986)		2nd (1993)		3rd (2008)		1st (1986)		2nd (1993)		3rd (2008)	
	Dev'ing	Dev'd	Dev'ing	Dev'd	Dev'ing	Dev'd	Dev'ing	Dev'd	Dev'ing	Dev'd	Dev'ing	Dev'd
Africa	44	0	44	0	48	0	73 %	--	52 %	--	15 %	--
Asia	27	3	27	3	22	1	78 %	100 %	56 %	100 %	23 %	100 %
South West Pacific					14	2					0 %	0 %
Europe	10	18	11	21	22	26	60 %	67 %	73 %	52 %	14%	27%
Latin America & the Caribbean	33	0	33	1	33	0	88 %	--	67 %	0 %	36%	--
North America	0	2	0	2	0	2	--	100 %	--	100 %	--	50%
Near East	21	0	20	0	21	0	67 %	--	40 %	--	14%	--
Total	*135*	*23*	*135*	*27*	*160*	*31*	*76 %*	*74 %*	*56 %*	*59 %*		
Overall	*158*		*162*		*191*		*75 %*		*57 %*		*21 %*	

[1] Regions for the 1st and 2nd questionnaire are as defined in their reports [3, 4]; regions for the 3rd questionnaire are as defined for the FAO governing bodies (http://www.fao.org/unfao/govbodies/membernations_reg_en.asp).

2 Classification of developing and developed countries for the 1st and 2nd questionnaire are as defined in their reports [3, 4]; classification fior the 3rd questionnaire as defined in SOFA 2006 [5], with developing countries in this table based on the total of developing and transition countries in SOFA 2006.

Annex 3 – Questionnaire on the implementation of the International Code of Conduct on the distribution and use of pesticide.

Annex A

Regular Monitoring Report

International Code of Conduct on Distribution and Use of Pesticides
Submitted by: [government] [3]

This report provides information regarding the observance by governments and others, where indicated, of the International Code of Conduct on the Distribution and Use of Pesticides (the "Code of Conduct"). The report follows the format set forth in the Guidelines on Monitoring and Observance of the Code of Conduct (the "*Guidelines*"). Both the Code of Conduct and the *Guidelines* are available on the FAO internet site, at www.fao.org/ag/AGP/AGPP/Pesticid/

I. Background Information

A. Contact details *Please provide requested information*	
Name of Agency/Entity:	
Responsible and/or contact person:	
Mailing address:	
Telephone no.:	Fax no.:
Email address:	Web site url:

B. Responsibility		
Areas of responsibility/activity relating to pesticides: *More than one box can be ticked if relevant*		
Legislation/regulation ☐	Pesticide registration/authorization ☐	Facility licensing ☐
Enforcement/inspection ☐	Research/testing ☐	Training/extension ☐
Other ☐		*Please describe*
Types of pesticides that are regulated by this Agency (for regulatory Agencies) *More than one box can be ticked if relevant*		
Agricultural pesticides ☐	Veterinary pesticides ☐	Public health pesticides ☐ Household pesticides ☐

C. Description of the Agency/Entity If available, please attach a recent report or document describing the structure and activities of this Agency/Entity (e.g. a recent annual report or a presentation made for a conference)	Information provided? Yes ☐ No ☐

[3] As noted in the accompanying *Guidelines*, this form should be used by governments to submit their regular monitoring reports. The pesticide industry, NGOs and other interested parties may use this form, as applicable, or develop their own format for reporting, as described further in the accompanying *Guidelines*.

Practical Suggestions to Gather the Information Requested in Part II of this Form

It is recommended that governments develop an inventory and draw on existing sources of material in providing the requested information. As requested in the Form, please identify the source of the information that is provided.

In gathering the information requested in the Form, it will be important to seek involvement and input from all relevant ministries and other key entities, including agriculture, environment, health, customs (e.g., for trade data), labour (e.g., for occupational impacts), industry/commerce, and trade. This should also include coordination with relevant sub-national authorities and entities.

It will also be important to develop simple methods to address information gaps.

II. Initial Focus for Monitoring

Please provide the requested information as attachments

A. Pest Management

This Section requests information relevant to Articles 3.7 and 3.11 of the Code of Conduct.

Integrated Pest Management (Article 3.7):

To what extent has your country been successful in promoting the use of IPM? Please rank according to the following scale:

☐ Not at all; ☐ To a small degree; ☐ To a large degree; ☐ Fully/Completely

Please estimate the percentage of national government resources put into these efforts in relation to all national government programs to support pest and pesticide management:

%

Does your country have a National IPM program?

☐Yes; ☐No

Has a specific IPM policy been declared?

☐ Yes; ☐ No

Is IPM specifically mentioned in other agricultural policy documents (including laws and regulations, where applicable)?

☐ Yes; ☐ No

Has the government developed strategies that promote increased participation of:

Farmers (including women's groups): ☐ Yes; ☐ No

Extension agents: ☐ Yes; ☐ No

On-farm resources: ☐ Yes; ☐ No

In terms of overall agricultural policy, do you consider IPM high priority?

☐ Yes; ☐ No

To what extent have lending institutions and donor agencies provided support to national IPM practices and improved IPM concepts and practices:

☐ Not at all; ☐ To a small degree; ☐ To a large degree; ☐ Fully/Completely

Please provide additional remarks regarding your responses to each of the above on a separate sheet of paper, if any.

Resistance management (Article 3.11):

Does your country have significant problems with pest resistance?

In agriculture ☐ Yes; ☐ No/

In public health ☐ Yes; ☐ No

Do you have sufficient resources and expertise to address problems with pest resistance?

In agricultural sector ☐ Yes; ☐ No

In public health sector ☐ Yes; ☐ No

To what extent has your government made efforts to collaborate with pesticide industry, national and international organisations in developing and promoting resistance management strategies:

☐ Not at all; ☐ To a small degree; ☐ To a large degree; ☐ Fully/completely

Please describe the basis for your responses on a separate sheet of paper, including a brief description of:

o Information on significant examples where pest resistance has been detected and is posing a problem in your country, and the nature of the problem.

o Needs in addressing problems of pest resistance.

B. Testing, Quality Control and Effects in the Field

This Section requests information relevant to Articles 4.2, 4.4 and 4.5 of the Code of Conduct.

Facilities for quality control over pesticides (Article 4.2):

Do you have significant problems or concerns about the quality of pesticides offered for sale or export in your country?

☐ Yes; ☐ No

To what extent does your country possess or have access to facilities to verify and exercise control over the quality of pesticides offered for sale or export

☐ Not at all; ☐ To a small degree; ☐ To a large degree; ☐ Fully/completely

Do you have significant problems or concerns about your ability to establish the quantity of active ingredients and the suitability of their formulation, according to FAO or WHO specifications when available?

☐ Yes; ☐ No

To what extent do you possess or have access to facilities to establish the quantity of the active ingredient or ingredients and the suitability of their formulation, according to FAO or WHO specifications, when available.

☐ Not at all; ☐ To a small degree; ☐ To a large degree; ☐ Fully/completely

Does your national law or regulatory framework require pesticides to conform to relevant FAO or WHO specifications when available?

☐ Yes; ☐ No

Please provide additional remarks regarding your responses to each of the above on a separate sheet of paper, if any.

Assistance by exporting governments in relation to testing and analysis (Article 4.4):

Has your country received assistance during the last three years in training personnel on trial design and conduct, the interpretation and evaluation of test data, and risk/benefit analysis?

For exporting governments, to what extent do you assist developing importing countries in training personnel on trial design and conduct, the interpretation and evaluation of test data, and risk/benefit analysis.

☐ Not at all; ☐ To a small degree; ☐ To a large degree; ☐ Fully/completely

For those that provide such assistance, please respond to the following questions.

Does your government have ongoing programs or initiatives to assist developing importing countries in personnel on trial design and conduct, the interpretation and evaluation of test data, and risk/benefit analysis?

☐ Yes; ☐ No

Has your government provided funding to developing importing countries for training in the mentioned areas?

☐ Yes; ☐ No

Has your government made available experts to participate in training in the mentioned areas?

☐ Yes; ☐ No

If the answer to any of the above is yes, please describe briefly on a separate sheet of paper.

Please also describe to what extent you have taken actions to promote maximum availability to, and use by importing developing countries of, appropriate international assessments and evaluations of pesticide hazards and risks.

☐ Not at all; ☐ To a small degree; ☐ To a large degree; ☐ Fully/completely

For those that have taken such actions, please describe briefly on a separate sheet of paper.

Collaboration between pesticide industry and governments in post-registration surveillance and monitoring to determine fate and effects of pesticides under field conditions (Article 4.5):

To what extend has your government taken actions to collaborate with pesticide industry and with other governments in post-registration surveillance or in conducting monitoring studies to determine the fate of pesticides and their health and environmental effects under field conditions.

☐ Not at all; ☐ To a small degree; ☐ To a large degree; ☐ Fully/completely

For those that have taken such actions, please describe briefly on a separate sheet of paper.

C. Health and Environmental Information

This Section requests information relevant to Articles 5.1.3, 5.1.5, 5.1.9 and 5.1.10 of the Code of Conduct. Practical suggestions for gathering the requested information are attached to this Form.

Occupational exposure to pesticides, and poisonings (Article 5.1.3)

Does your Government conduct surveys on occupational exposure to pesticides?

Regularly ☐

Occasionally ☐

Once recently ☐

None ☐

Do the surveys cover?

The entire country ☐

Selected regions of the country ☐

Selected locations ☐

Who do these surveys address?

Farm workers ☐

Workers in formulation or manufacturing facilities ☐

Others ☐, please specify:

If the answer to any of the above is yes, please describe the surveys and methods used on a separate sheet of paper.

Do you document poisoning cases?

☐ Yes; ☐ No

Have you established poison control centres or facilities near areas where pesticide poisoning may occur?

☐ Yes; ☐ No

If so, please describe on a separate sheet of paper .

Is medical assistance readily available to areas where pesticide poisoning may occur?

☐ Yes; ☐ No

Is any training available that would assist in the identification and management of pesticide poisoning symptoms?

☐ Yes; ☐ No

Gathering data on environmental contamination and incidents (Article 5.1.9):

Do you have significant problems or concerns of environmental contamination from pesticides?

☐ Yes; ☐ No

Have you had significant incidents of pesticide contamination to the environment during the last three years, e.g., to wildlife or aquatic ecosystems?

☐ Yes; ☐ No

Have you established programs to collect data on environmental contamination and specific incidents relating to pesticides. ☐ Yes; ☐ No

More specifically, have you collected data on pesticide effects on:

Wildlife: ☐ Yes; ☐ No

Endangered Species: ☐ Yes; ☐ No

Aquatic ecosystems: ☐ Yes; ☐ No

Terrestrial ecosystems: ☐ Yes; ☐ No

Specific incidents that have harmed the environment (e.g., fish poisonings, etc.): ☐ Yes; ☐ No

If the answer to any of the above is yes, please describe the surveys and methods used on a separate sheet of paper.

Monitoring pesticide residues in food (Article 5.1.10):

Has your Government established national MRLs for food and feed items?

☐ Yes; ☐ No

Does your Government have implemented a national system to monitor pesticide residues?

In food/feed ☐ Yes; ☐ No

In the environment ☐ Yes; ☐ No

If no, has your government recently carried out any studies on residues in food or in the environment?

☐ Yes; ☐ No

If the answer is yes, please describe the surveys and methods used on a separate sheet of paper.

D. Trends in Manufacture, Use and Trade

This Section requests information relevant to Articles 6.1.8 and 6.1.10 of the Code of Conduct

Data on Manufacture, Use and Trade (Article 6.1.8):

Have you established and applied methods to collect and record data on the import, export, manufacture, formulation, quality, and use of pesticides?

Have you collected data regularly in the following areas:

Import: ☐ Yes; ☐ No

Export: ☐ Yes; ☐ No

Manufacture: ☐ Yes; ☐ No

Formulation: ☐ Yes; ☐ No

Quality: ☐ Yes; ☐ No

Use: ☐ Yes; ☐ No

Does your Government send any data to FAO in response to the yearly questionnaire on pesticide consumption?

☐ Yes; ☐ No

If the answer to any of the above is yes, please describe in a separate sheet of paper or provide references what type of data has been collected, how often, and whether it contains any significant gaps.

Methods to detect and control illegal trade in pesticides (Article 6.1.10):

Have you established methods to detect illegal trade in pesticides?

☐ Yes; ☐ No

Have you established methods to control illegal trade in pesticides?

☐ Yes; ☐ No

Do you consider that there are or might be significant problems of illegal import of pesticides in your country?

☐ Yes; ☐ No

If the answer to either of the above questions is yes, please describe on a separate sheet of paper.

E. Selected Standards of Conduct

This section requests information relevant to certain standards of conduct set forth in Articles 5,6 and 7 of the Code of Conduct, as well as Articles 10 and 11

Risk reduction efforts by pesticide industry (Article 5.2.3):

Please describe the extent to which the pesticide industry has made efforts to reduce risks from pesticides in relation to the following:

Making less toxic formulations available:

☐ Not at all; ☐ To a small degree; ☐ To a large degree; ☐ Fully/completely

Introducing products in ready-to-use packages

☐ Not at all; ☐ To a small degree; ☐ To a large degree; ☐ Fully/completely

Developing application methods and equipment that minimize exposure to pesticides

☐ Not at all; ☐ To a small degree; ☐ To a large degree; ☐ Fully/completely

Using returnable and refillable containers where effective container collection systems are in place

☐ Not at all; ☐ To a small degree; ☐ To a large degree; ☐ Fully/completely

Using containers that are not attractive to or easily opened by children, particularly for domestic use products

☐ Not at all; ☐ To a small degree; ☐ To a large degree; ☐ Fully/completely

Using clear and concise labeling

☐ Not at all; ☐ To a small degree; ☐ To a large degree; ☐ Fully/completely

Please describe on a separate sheet of paper any positive actions that have been taken, as well as any particular issues or concerns, in relation to the above-mentioned areas

Cooperative actions for risk reduction (Article 5.3):

Has your government alone and/or in cooperation with industry undertaken cooperative actions to further reduce risks in the following areas:

Promoting the use of proper and affordable personal protective equipment:

☐ Yes; ☐ No

Making provisions for safe storage of pesticides at both warehouse and farm level

☐ Yes; ☐ No

Establishing services to collect and safely dispose of used containers and small quantities of left-over pesticides

☐ Yes; ☐ No

Protecting biodiversity and minimizing adverse effects of pesticides on the environment (water, soil and air) and on non-target organisms

☐ Yes; ☐ No

Please describe on a separate sheet of paper any positive cooperative initiatives, as well as any particular issues or concerns, in relation to the above-mentioned areas.

National legislation and enforcement (Article 6.1.1):

Has your government introduced the necessary legislation for the regulation of pesticides covering their entire life-cycle and made provisions for its effective enforcement.

☐ Yes; ☐ No

Please describe briefly on a separate sheet of paper successes and gaps in the legislation and enforcement.

Registration system (Article 6.1.2):

Does your government ensure that each pesticide product is registered before it can be made available for use?

☐ Yes; ☐ No

Please describe on a separate sheet of paper both successes and gaps in relation to the registration system.

Conformity with relevant FAO and WHO specifications (Article 6.2.4):

Does the pesticide industry ensure that active ingredients and formulated products conform with relevant FAO and WHO specifications.

☐ Yes; ☐ No

Please describe on a separate sheet of paper both successes and difficulties in relation to this matter, as applicable.

Voluntary responsive action (Article 6.2.6):

Has the pesticide industry, when problems occur in your country, voluntarily taken corrective action and, when requested by governments, helped to find solutions to difficulties.

☐ Yes; ☐ No

Please describe on a separate sheet of paper any positive examples and any difficulties in this regard.

Provision of data on trade, manufacture and sale by pesticide industry (Article 6.2.7):

Has the pesticide industry has provided the national government with clear and concise data on the following:

Export: ☐ Yes; ☐ No

Import: ☐ Yes; ☐ No

Manufacture: ☐ Yes; ☐ No

Formulation: ☐ Yes; ☐ No

Sales: ☐ Yes; ☐ No

Quality of pesticides: ☐ Yes; ☐ No

Prohibitions on highly toxic and hazardous products (Article 7.5):

Has your government prohibited the importation, sale and purchase of highly toxic and hazardous products, such as those included in WHO classes Ia and Ib, in light of Article 7.5 which indicates that such prohibitions may be desirable if other control measures or good marketing practices are insufficient to ensure that the product can be handled with acceptable risk to the user.

☐ Yes; ☐ No

If yes, please describe on a separate sheet of paper which products have been made subject to such prohibitions.

F. General Input on Observance of Code of Conduct

This section is designed to allow you to identify areas of the Code of Conduct of particular important in your country, and to highlight any problems relating to pesticides that you consider merit attention.

Question 1: Which provisions of the Code of Conduct are especially important at the national level, and why? Please explain your answer with examples.

Question 2: In which areas covered by the Code of Conduct are there the most significant problems in full observance? Please explain what these problems are and why you believe that they exist. In answering these two questions, please provide your professional opinion on the following:

- What are the strengths of the present pesticide management system?
- What are the weaknesses of the present pesticide management system?
- What are the major bottlenecks to ensure sound pesticide management?
- What are priority areas for strengthening of pesticide management?
- In what areas could FAO possibly provide assistance for strengthening of pesticide management?

Please provide your responses on a separate sheet of paper

III. General

This part is designed to allow you to provide any comments on this Monitoring Report form, including suggestions for modifications and improvements.

Please provide any comments on this Monitoring Report form, including suggestions for modifications and improvements, you may use a separate sheet of paper.

Name and Title:

Please return this form to the FAO Representation, at the following address: [insert address].

Where possible, it is requested that responses by provided in electronic format. An electronic version of this questionnaire can be made available on request, please write to Mr. Mark Davis (email address: Pesticide-Management@fao.org).

Practical Suggestions to Gather the Information Requested in Part II of the Form

General:

It is recommended that governments develop an inventory and use existing sources of material in providing the requested information. As requested in the Form, please identify the source of the information that is provided.

In gathering the information requested in the Form, it will be important to seek involvement and input from all relevant ministries and other key entities, including agriculture, environment, health, customs (e.g., for trade data), labor (e.g., for occupational impacts), industry/commerce, and trade. This should also include coordination with relevant sub-national authorities and entities.

It will also be important to develop simple methods to address information gaps. . Finally, it will be important to identify responsible officials/experts with responsibility to gather and report the requested information. Please inform the FAO Secretariat of who is the responsible official/expert.