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Report of the OECD Pesticide Risk Reduction Steering Group: The Second Risk Reduction Survey

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**Report of the OECD Pesticide
Risk Reduction Steering Group**

The Second Risk Reduction Survey

11 April 2006

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**OECD Environment Directorate,
Environment, Health and Safety Division**

**2 rue André-Pascal
75775 Paris Cedex 16
France**

Fax: (33-1) 45 24 16 75

E-mail: ehscont@oecd.org

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PART I

1. BACKGROUND

1. 2004 marked the ten year anniversary of the Risk Reduction Project initiated by the OECD Working Group on Pesticides (WGP) in 1994. During its first decade, the project, overseen by the Risk Reduction Steering Group (RRSG), has undertaken activities to: (i) promote information exchange, (ii) develop tools for measuring progress in risk reduction, and (iii) draw attention to special issues. To date, it has focused on agricultural use of pesticides.

2. ***The First survey, 1994-1995:*** The first activity undertaken by the Risk Reduction Project was to survey the pesticide risk reduction activities being implemented in OECD and selected FAO countries. The purpose was to inform countries of what was going on elsewhere and to initiate a dialogue about promising approaches to risk reduction. The survey report was published in 1996 and is posted on the public web site. Part I of the report gives an overview of the different approaches and policy tools in use. Part II of the report contains the original survey responses in a table format and contact persons. (The publication web link is provided here:

http://www.oecd.org/document/60/0,2340,en_2649_34383_2073276_1_1_1_1,00.html.)

3. ***Uppsala Workshop, 1995:*** The survey report was used as a starting point for the Workshop on Risk Reduction held in Uppsala, Sweden in 1995. The workshop was jointly organised with FAO to provide an opportunity for countries to exchange information about pesticide risk reduction activities. The workshop also produced a “mini survey” that compiled the participants’ personal views on pesticide risks. The workshop recommendations were targeted to OECD, FAO, governments and the pesticide industry. This workshop essentially launched the Pesticide Risk Reduction Project; its recommendations have inspired most of the activities subsequently undertaken by the RRSG.

Second Risk Reduction Survey

4. Almost a decade after the Uppsala workshop, it was deemed timely to determine what had happened since and to identify where gaps exist that could be filled by OECD support. The WGP decided in February 2004 to conduct a Second Risk Reduction Survey. The survey was meant to identify policies introduced, what worked, and what didn’t, and their costs and benefits during the decade since the first survey in 1994-1995. Thus, the objectives of the Second Risk Reduction Survey were to:

1. take stock of what has been accomplished at OECD and at country level since the first survey;
2. serve as a risk reduction diagnostic tool (what worked and what didn’t); and
3. identify where gaps exist (what should drive the future OECD work).

5. Rather than collecting detailed activity descriptions or updates of the “activities tables” that constituted the core of the first survey (compiled into Part 2 of the 1996 survey report), the Second Survey focuses on an *evaluation of policy tools and approaches used* (the points 1 and 2 above). Where new policies, goals or activities have been introduced since the first survey or the most recent Risk Reduction Update, their descriptions were provided. The survey results identified best practices as well as bottlenecks and challenges faced in implementing various policy tools and activities aimed at pesticide risk reduction.

The findings also identified where gaps exist, and helped provide direction for possible future RRSB work (point 3 above). To begin with, the survey results were used in the development of the RRSB Work Programme for 2006-2008. If deemed useful, another “Uppsala-like” workshop may be organised to discuss the survey findings, evaluate the last ten years of pesticide risk reduction efforts, and brainstorm on possible future OECD work in this area.

6. The questionnaire for the Second Survey was shorter than the first, with a three-part structure: **Part A** on what has been accomplished, what worked and what didn't in the last decade; **Part B** on gaps, remaining challenges and future areas of work; and **Part C**, which was optional, on miscellaneous questions which member countries wished to ask other countries. The questionnaire which was sent out to the WGP on 26 June 2004 is attached as **Annex 1**.

2. THE SURVEY RESULTS

7. Eighteen responses were received from: **Australia, Canada, Denmark, Germany, Hungary, Ireland, Japan, Korea, the Netherlands, New Zealand, Norway, the Slovak Republic, Slovenia, Sweden, Switzerland, the UK, the US and the EC.**

8. Many countries responded to the questionnaire in the context of the Second Risk Reduction Survey, and provided information on developments since the First Survey in 1994. In such cases, the results presented in this report may not fully reflect the complete picture of a country's pesticide risk reduction efforts (i.e. risk reduction measures already reported in the First Survey may not be reported in this Survey Report.)

9. Part I of the present document contains the survey report on the results, and Part II provides the individual survey responses submitted by countries.

PART A - EVALUATION OF PESTICIDE RISK REDUCTION EFFORTS SINCE 1994/5

Policy framework and context for pesticide risk reduction efforts

10. The questionnaire asked member countries to provide information on activities undertaken following the recommendations of the Uppsala Workshop, and to provide a brief introduction of the policy framework/context for pesticide risk reduction efforts. Individual country descriptions of overall policy frameworks and contexts are provided in Part II of the report. Many respondents reported that several government agencies are involved in the implementation of risk reduction programmes, across line authorities (agriculture, environment, health and safety, industry) and jurisdictions (national/federal, state local). **Hungary** and **New Zealand** reported that this has led to a lack of an explicit coherent national pesticide risk reduction policy framework, with a division between regulatory and voluntary programmes. Meanwhile, **Sweden** reported that a good integration and balance between regulatory and voluntary actions by different agencies has been achieved.

11. The questionnaire specifically asked whether there have been any evaluations of the policies/plans and goals/targets mentioned in the first survey, and if so, respondents were asked to provide information about the findings. Two countries stated that no policy evaluations were carried out, one said this was due to major changes to its policy framework after 1995 (**Germany**) and the other that it did not participate in the first survey (**Ireland**). Eight respondents (**Australia, Canada, Denmark, Netherlands, Norway, Sweden, US, EC**) indicated that there have been evaluations of their pesticide risk reduction plans, programmes and/or targets. Most of them report that good progress has been made in the implementation of their pesticide risk reduction programmes in general, with some challenges and remaining work ahead listed in sections below.

12. Most countries reported past, ongoing and planned use of indicators or quantitative targets to evaluate progress in risk reduction policy and programme implementation. Some of them are front-runners in the development of risk indicators, and have contributed to the OECD pesticide risk indicators project. On the other hand, some reported difficulties due to incomplete data, particularly on pesticide use. **Denmark** uses treatment frequency, an indicator for spraying intensity, as the main indicator to measure risk reduction. The county reports that, due to a lack of data, it was not possible to establish load indices (amount of active ingredients weighted with acute or chronic toxicity) for some non-target organisms. The **Netherlands** has developed environmental risk indicators (aquatic organisms and ground water), as well as indicators to measure changes in the degree of dependence on pesticides (not simply pesticide sales and use). **Norway** provided information on its past risk reduction plans and targets, and quantitative results of reductions achieved (and not achieved). The country reports that both use and risk reduction targets were met, but goals for residues in food and water have not been fully achieved. **Switzerland** reports that a policy evaluation was carried out, but available data did not permit a conclusive evaluation of the policies. The country plans in the future to use risk indicators when setting targets for risk reduction. In **Sweden**, for the periods 1997-2001 and 2002-2006, the targets were set for risk reduction expressed by indicators, and no longer quantitative use reduction targets as for earlier periods. The country recently refined its risk indicators to measure progress of the ongoing fourth (2002-2006) national risk reduction programme. **Germany** reported that environmental risk indicators had been applied for the years 1987, 1994, 1998, 2000, 2002, based on estimated pesticide applications derived from annual sales data. The **UK** reported on a set of risk indicators developed by government (environmental and human risks, food residues), and on another developed by the industry Voluntary Initiative which includes both risk indicators and performance

indicators (e.g. number of spray operators registered, number of agronomists with additional environmental qualifications).

13. Some countries reported the use of *performance indicators* to measure success of their programmes. The **US** reported that it is currently developing measures of success for several individual voluntary programmes on pesticide risk reduction, as part of a federal government requirement under the Government Performance Reporting Act. In **Canada**, indicators to measure achievements are generally tied to the ongoing business of pesticide registration (number of re-evaluations completed, development of new templates, compliance data). **Australia** is developing national operating principles and agreed performance outcomes for control of use of agvet chemicals and improved feedback mechanisms.

14. Only a handful of countries reported the use of *economic analyses*. **Denmark** carried out a major economic analysis in 1997 of the overall impacts of phasing out the use of pesticides in the agricultural industry (the Bechel Committee report). It concluded that treatment frequency could be reduced by 30-40% over a 5-10 year period without significant costs to growers and socio-economic consequences. **Australia** reported using economic analyses in pesticide evaluation studies, but lack of data on the cost of pesticide use (negative environmental and health impacts) left the analysis incomplete. To address this problem, a comprehensive pesticide use reporting system is needed. The **UK** reported that there had been a rolling programme for economic policy evaluations between 1994 and 1998 which included pesticides, then from 2000 under an overall "Modernising Government" Initiative. All other respondents either indicated that they did not use in-depth economic analyses in support of registration or re-registration, or they made no specific mention of any economic analysis of risk reduction efforts.

Major policy modifications and introduction of new policies, strategies, goals or targets since the first survey

15. The countries were asked to provide information on any major modifications in pesticide risk reduction policy or introduction of any new policies, strategies, goals or targets (both qualitative and quantitative) since the first survey in 1994-5. As the first risk reduction survey had focused on agricultural pesticides, for this second survey countries were asked to provide information on policies, plans or goals addressing non-agricultural sectors, if available. All respondents provided information to answer this question, reporting changes in their policy frameworks during this period.

16. Several countries reported on *renewed goals and targets*. **Denmark** has set new reduction goals in terms of treatment frequency under the 2004-2009 Pesticide Plan. **Germany** is developing a new risk reduction programme with new targets and evaluation criteria including risk reduction based on application index. The **Netherlands** places emphasis on the goal to reduce pesticide concentration in surface water below the Maximum Permissible Concentration by the year 2010, which will require a 95% reduction in the environmental impact from pesticides from the 1998 levels. **Norway** set a 25% reduction in environmental and health risks from pesticide use during 1998-2002.

17. In the last 10 years, most responding countries (e.g. **Canada**, **Germany**) reformed or, in some cases (e.g. **Korea**, **New Zealand**), totally renewed their *pesticide registration and re-registration regimes*. Such changes include the introduction of registration fees (e.g. **US**) and special procedures for certain products or uses (*reduced risk pesticides, minor use, home and garden/amateur use*). Some countries also reported the establishment of registration schemes for biocides (**Ireland**) and biopesticides (**Korea**, **Norway**). Some registration schemes added improved labelling requirements (e.g. **Australia**, **Norway**) and, in the case of the **US**, added an emphasis on the protection of children and infants. The **Canadian** regime now allows for the sharing of evaluation reports with international regulators. **Japan** reported on a 2003 legal revision which included a new ban on the import and sale of unregistered pesticides, and increased

penalties for non-compliance. In some cases (e.g. the *EC*), review programme targets had to be modified due to delays.

18. There were also significant institutional changes reported by two respondents. In *Germany*, the Federal Office of Consumer Protection and Food Safety (BVL) and the Federal Institute of Risk Assessment (BfR) were established in 2002. *The EC* reported the establishment in 2002 of the European Food Safety Authority (EFSA). Both changes resulted in the separation of risk assessment and risk management activities.

19. Many of the respondents cited the introduction of new mandatory requirements addressing the “use” phase of pesticides, including: operator *training and authorisation/certification* (*Norway* reported a database of all authorised professional users); *application standards; equipment registration, testing and/or calibration* (*Germany, Ireland*) and *usage log/record keeping* (*Ireland, Norway*).

20. Where such measures are not mandatory, voluntary standards/guidelines/codes of practice for IPM (*Canada, Hungary, Japan, Norway, UK*), aerial applications (*Japan*) and/or usage surveys have been introduced, and training and supervision of operators strengthened. In the *UK*, an emphasis is placed on Integrated Crop Management (the whole-farm approach), and food producers, retailers and pesticide industry are implementing the Voluntary Initiative and stewardship schemes to minimise pesticide risks. *Norway* reported results of such initiatives; a farmer survey indicated a more positive attitude and practice in pesticide use and handling.

21. Several countries (e.g. *Australia, Germany, Norway*) reported the introduction of enhanced monitoring programmes for pesticide *residues in food*. They have been extended to cover more substances, harmonised across jurisdictions, or improved through the use of indicators for exceedence from MRLs. Several countries (e.g. *Denmark, Germany, Japan, the Netherlands*) also cited renewed focus on the protection of water bodies, through enhanced environmental standards and *surface and groundwater monitoring* for pesticide residues.

22. Several countries provided information regarding non-agricultural sectors. *Canada, Denmark* and the *US* reported on initiatives to limit the use of pesticides in public/urban areas and lawns. *Germany* reported new restrictions on non-agricultural use of certain herbicides. Several countries indicated that, for non-professional non-agricultural uses, only certain products with low toxicity or diluted and ready-to-use products sold in small packages and with a high environmental tax are available. *Sweden* reported that forestry, home and garden, industrial and amenity uses have not been addressed by the national risk reduction programme.

23. In *Norway*, a revised environmental tax system raised the level of tax, and also changed the calculation of tax rates to reflect different levels of risks. The *Swiss* Federal Council considered the introduction of new incentive taxes on plant protection products if the existing risk reduction measures were not sufficient, but later it was deemed unnecessary. The *UK* Voluntary Initiative was introduced by industry and farmers as an alternative to a pesticide tax. The *EC* reports changes to the conditions for agricultural subsidies which have now been decoupled from production and linked to cross-compliance. Similarly, *Slovenia*'s new regulation on special financial supports requires fulfilment of all relevant conditions prescribed by law on plant protection.

Major risk reduction achievements over the last 10 years

24. Countries were asked about the major risk reduction achievements over the last 10 years, and the reasons behind their success. Several respondents mentioned reductions in pesticide sales or use (e.g. the *Netherlands*), and in some cases, reduction in risks to health and the environment. *Norway* supported

pesticide risk reduction by its indicator results, and **Denmark** reported a reduction in the treatment frequency. **New Zealand** mentioned the reduction in the use of organophosphates in the fruit industry to virtually zero over a five-year period. **Switzerland** cited a significant increase in the share of ecological farming, while **Hungary** mentioned wider implementation of IPM. **Japan** reported very few cases of pesticide residue levels exceeding established limits (in foods and the environment), while **Slovenia** reported that such cases are constantly decreasing.

25. As for the *reasons* for their pesticide risk reduction achievements, **New Zealand, Norway, Slovenia,** and **Sweden** mentioned good cooperation with farmers and growers and their willingness and (in some cases financial) support for changes. This is due to farmers'/growers' increased awareness and knowledge of potential health and environmental risks associated with the use of pesticides, good practice in pesticide handling, integrated production and other alternative methods, often introduced through extension services. **Norway** mentioned that the introduction of mandatory professional user authorisation courses addressing these issues had contributed to the success. **Denmark** and **Hungary** cited public concerns over pesticides also as the reason behind positive changes.

26. Three countries (**Norway, Sweden, New Zealand**) indicated that one reason for their risk reduction achievement was the thorough follow-up and implementation of risk reduction plans and initiatives at different levels (national, state, local) and driven by different stakeholders (farmers, research institutions, government authorities). **Canada** stressed the importance of early consultation with stakeholders behind the success of its risk reduction efforts.

27. Additional *reasons* for success that were mentioned include:

1. Integration and balance between mandatory and voluntary elements (**Sweden**);
2. Availability of well-researched alternatives to conventional plant protection products and application methods (**New Zealand, Netherlands**);
3. A “market driver” provided by the importing countries, signalling that residues of certain pesticides were unacceptable (**New Zealand**);
4. Fixed goals and timeframes and an economy-wide economic analysis on pesticide use reduction (**Denmark**);
5. A government subsidy for certified “green” agricultural produce (**Netherlands**); and
6. Continuous improvements in the national registration scheme (**Australia, Denmark**).

Policy tools or activities that have worked

28. Respondents also provided examples of policy tools that they found to be effective in promoting pesticide risk reduction. The questionnaire listed different types of policy instruments.

a) Regulation and enforcement

29. Eleven respondents (**Australia, Canada, Denmark, Germany, Hungary, Netherlands, Norway, Sweden, Switzerland, UK, EC**) listed their registration and re-registration procedures to be effective tools in promoting pesticide risk reduction. Some mentioned that the use of comparative assessment and the precautionary principle had facilitated easier registration of lower risk pesticides, while citing the removal of more toxic active substances from the market. Also mentioned were programmes of targeted reviews of specific issues (e.g. minor use) allowing for greater efficiency and timeliness of reviews.

30. Three respondents (**Australia, Germany, Japan**) listed regulations regarding farmer training, application equipment and other usage controls as an effective policy tool. In **Switzerland**, mandatory

training was introduced for all agricultural users, while in others cases only for commercial users. Within **Australia**, different regulatory requirements on training exist in different jurisdictions. Also, the introduction of mandatory record/log keeping of use was mentioned (**Japan, Australia** in some jurisdictions).

31. **Germany** and **Ireland** report that regulations regarding monitoring of pesticide residues in crops/food and publishing of results have been as an effective tool. Three countries (**Australia, Germany, Japan**) mentioned that the regulatory requirements for ground and surface water monitoring for pesticide contamination was a successful activity.

32. **Australia** mentioned regulatory reforms regarding product labelling. If the registration authority finds that existing product labels do not contain adequate instructions, it can require the label instructions to be changed without a formal review.

33. **Japan** reported increased penalties for illegal/unauthorised uses of pesticides, and **Australia** mentioned a major reform to address safe and effective chemicals for minor use.

b) Standardisation of application equipment and technical verifications (mandatory or voluntary)

34. Some countries reported mandatory standards for users, including usage records near residential areas (**Japan**) or waterways (**Netherlands**), and application equipment verified through mandatory application equipment checks (**Germany, Slovak Republic**) as successful policy measures.

35. **Germany, Ireland** and **Switzerland** reported voluntary standards for application procedures and equipment such as injectors and drift-reducing nozzles (promoted through extension services). **Sweden** mentioned voluntary testing of spray equipment.

c) Voluntary programmes

36. **Germany** and **Ireland** reported voluntary quality assurance/certification/labelling programmes run by farmers and growers (fruit, mushrooms, horticulture) for controlled integrated production with reduced pesticide risks. In **Germany**, organic farming is also taking off through voluntary agri-environmental programmes.

37. **Japan** reported voluntary programmes run by pesticide manufacturers to improve pesticide application techniques and formulation for enhanced safety. The pesticide industry has joined hands with farmers and growers in the **UK** for the “Voluntary Initiative” which has assured good farmer ‘buy-in’, and in **Sweden** for a voluntary information campaign “Safe Pesticides Use” which is also supported by government. **Canada** reports that the collection and disposal programme for obsolete pesticides by a national pesticide industry association has been successful.

38. The benefits of voluntary approaches are that they can be less bureaucratic, less costly to administer and more flexible and they can generate ‘ownership’ of initiatives. However, against this it needs to be recognised that uptake could be low without any mandatory element. In particular, a voluntary approach may make it difficult to reach precisely those people whose behaviours most need to be changed for the initiative to succeed. There is no way of enforcing the desired outcome. Generally, integration and balance between mandatory and voluntary elements seem to have been the key to success.

d) Taxes, subsidies/incentives, and other economic instruments

39. **Denmark, Norway** and **Sweden** reported environmental taxes or levies on pesticides as having been an effective tool for risk reduction. In **Norway**, the new tax system is *differentiated by hazard/risk*

classes (as opposed to volume of price as in other countries) and this led to a decrease in sales of products in the highest risk classes, and increases in sales of lower risk products.

40. **Germany, the US** and the **EC** reported subsidies linked to agri-environmental programmes to promote IPM and good ecological farming practices. The **US** listed incentives and financial supports provided to research projects promoting IPM, including those for generating necessary data to support pesticide registration for minor crops and for pesticides with reduced risk that would otherwise not be done by pesticide registrants due to lack of economic incentives.

41. **Ireland** mentioned that it has no plans to introduce any taxes or incentives/subsidies.

e) Labelling (Do users read them? Is there any information/evidence of effectiveness of labels?)

42. Not many countries responded to this question. **Ireland** reported that there was no information on label effectiveness.

f) Information, communication and outreach initiatives

43. Five countries (**Germany, Ireland, Japan, Norway, US**) reported that information, communication and outreach programmes had been effective tools for achieving pesticide risk reduction. Examples listed include: publishing of pesticide concentration levels in public water systems and golf course drainage, information dissemination through the web to enhance awareness of users (**Japan**), and an internet-based pest forecasting system (**Norway**, with a farmer survey indicating that 32% of respondents considered this service to have contributed significantly to reduced use).

44. The **US** listed several outreach and technical assistance programmes that have been successful. For example, the Pesticide Environmental Stewardship Program (PESP) is a long-running successful initiative originally reported in the First Risk Reduction Survey in 1994, and the number of participants in this programme increased significantly over the past decade. These technical assistance programmes aim to promote IPM, and some specifically address children in schools, the home and garden sector and methyl bromide alternatives. Some of these programmes involve grants. The **US** is currently developing evaluation criteria and indicators of success.

g) Education/training and certification (mandatory or voluntary) and extension service

45. Nine respondents (**Canada, Germany, Hungary, Ireland, Korea, Netherlands, Sweden, Switzerland, US**) listed examples of training and extension services that they consider to be effective. **Switzerland** mentioned mandatory training for every farmer on pesticide use, and in the **Netherlands** all professional users are required to possess a licence to be renewed every five years. **Ireland** reports that the pesticide registration authority makes its staff available for seminars and lectures, including those for degree courses. Topics and types of advisory/extension services mentioned include: pest forecasting, reduced dose rates and other application methods to reduce risks, demonstration trials and field courses. In **Canada**, the Standard for Pesticide Education, Training and Certification harmonised the variability in terminology, licensing practices and training that had existed across jurisdictions within the country, and across the border with the **US**. **Ireland** added that those giving advice and information must have a life science degree. **Hungary** introduced the “Doctor of Plant Medicine” certification scheme. **Switzerland** reported that extension services and mandatory farmer training had contributed to the increase in the share of ecological farming.

h) Demonstration farms

46. Four countries (**Germany, Ireland, Slovak Republic, US**) reported demonstration or model farms as a successful policy tool. They are found at national and state/lander levels, and some are run by universities or government departments. Such projects are often part of extension services with grant

funding. As mentioned earlier, the *US* is developing evaluation criteria for some of these projects to measure results.

i) Research and development

47. *Ireland* cited research and development as an area of activities that has been effective. Priority research topics listed include: *pest forecasting* models for important agricultural and horticultural pests (*Germany, Netherlands*); *organic farming* and instruments for reducing pesticide use, need-based crop protection; and *spraying techniques* (*Sweden*). *Korea* reported the development of pesticide formulations suitable for domestic agricultural practices such as rice seedlings in paddy fields. In the *Netherlands*, government support for the development of new techniques and methods have been effective.

Stakeholder involvement

48. The questionnaire asked how stakeholders are involved in defining and deciding on pesticide risk reduction activities. *Ireland, Japan, Slovenia* and the *UK* indicated that stakeholders are consulted when changes to legislation are proposed or when new legislation is proposed, via stakeholder meetings and formal and informal consultations. The *Netherlands* reported that its Multi-Year Crop Protection Plan had been developed with full involvement of stakeholders. *Canada* cited early consultation with stakeholders as a key to the success of individual risk reduction programmes.

The least successful risk reduction measures

49. The questionnaire asked member countries which policy measures or goals for pesticide risk reduction have been least successful or faced difficulties, and the reasons.

50. Several countries indicated that existing or new regulations related to the registration of active ingredients, are cumbersome (*Germany*), challenging to implement (*Hungary, Switzerland*), or even pose barriers to national pesticide risk reduction goals (*Sweden*, referring to the EU Directive). *Denmark* emphasised that the existing registration system does not safeguard against non-compliance and violation of the conditions for use.

51. Many countries report that voluntary initiatives (including extension services) only work when changes introduced are economically feasible (*Canada, Denmark, Germany, Netherlands, Sweden*), the voluntary nature does not facilitate mandatory reporting unless grants or cooperative agreements are involved (*US*) and the development of quantitative measure of success for voluntary programmes is still in the early days (*US*).

52. There were some recurring themes mentioned **by at least two countries** as difficulties faced or as reasons for lack of progress in risk reduction efforts. They include:

1. Transition to organic farming or to IMP has not been as rapid as expected, and a high dependency on chemical pesticides still remains (*Korea, Norway, Sweden*);
2. Shrinking budgets, reduced staff, and competing priorities (*Germany, Slovenia, US*);
3. Improper disposal of unwanted pesticides both in the agriculture (in *Norway* farmers find the “owner return system” required by legislation too costly and time consuming) and home and garden sectors (*New Zealand* cited disposal in urban sewerage and general lack of knowledge and awareness); the *UK* reported improper disposal of unwanted pesticides and used containers in both agriculture and home and garden sectors;
4. Difficulty in involving all farmers, including lacking awareness and willingness to take part in training courses (*New Zealand, Sweden*);

5. Testing or quality control of spraying equipment is difficult to implement even where mandatory; and where voluntary, low take-up even with subsidies (*Hungary, Norway*); and
6. Labels that are too long, diverse, and complex and farmers don't read them (*Germany, UK*).

53. Each of the following issues was mentioned **by one country** as difficulties faced or as reasons for lack of progress in risk reduction efforts:

1. Reduction goals for residues in food and water are not fully achieved;
2. Valuation of certain aspects of cost-benefit analyses during the approval process is very complex and costly (*Norway*);
3. Data collection and environmental monitoring is very expensive (*US*);
4. Different accreditation and training standards/requirements in different jurisdictions within a country, and reliance on industry stewardship programmes to set training requirements (*Australia*);
5. Addressing minor uses through a 'prescription system" (*Norway*); and
6. Transition from research to implementation by farms (*Germany*).

PART B - THE NEXT 10 YEARS

National agenda

54. Countries were asked to list the most important areas for future work or gaps that need to be filled domestically in their pesticide risk reduction efforts in the coming years. There were themes and topics that were identified by **several respondents**, suggesting that there is some degree of convergence in the priorities for future work in member countries. The list below provides the areas for future national efforts identified in descending order of importance (according to the number of citations by respondents):

1. **Policy Formulation and Evaluation**: Development and/or implementation of a *strategy/plan/programme/“operating principles”* for the sustainable use of pesticides and risk reduction (*Australia, Norway, Sweden, Slovenia, UK, EC* - **6 respondents**); establishment of quantitative *targets/“performance outcomes”* and the development and use of *indicators/“measures of success”* to evaluate progress towards agreed targets (*Australia, Hungary, Norway, UK, US*, by grower associations in *Switzerland* – **6 respondents**); analyses of the effectiveness of different *policy instruments or mix of instruments* to meet the targets (*UK*).
2. **Surface and Groundwater Monitoring**: emphasis on the protection of drinking, surface and groundwater (in light of the EU Water Framework Directive) through better monitoring and pollution prevention measures (*Hungary, Netherlands, Sweden, Switzerland, EC*); enhanced dissemination and use of monitoring results (*Australia*) – **6 respondents**.
3. **Training and Certification of Users/Advisors, Equipment**: Introduction/implementation of (mandatory) *user training/certification* programmes for safe handling of pesticides and application equipment; in some cases including mandatory spraying *equipment testing* (*Australia, Ireland, New Zealand, Sweden, EC* – **5 respondents**).
4. **Registration and Re-registration**: Full implementation of *new or reformed registration and re-registration regimes*, including where the EU requirements are being transposed (*Hungary, New Zealand, Switzerland, EC* – **4 respondents**); introduction of *comparative assessment* and *substitution principle* (*Norway, EC*), risk assessment for endocrine disrupters (*EC*).
5. **Residue Monitoring in Food**: enhanced national pesticide residue monitoring programmes including where food monitoring had been the responsibility of sub-national governments or where MRLs had not been harmonised with trading countries (*Australia, Netherlands, Ireland*); provision of portable kits for on-site residue monitoring (*Korea*) – **4 respondents**.
6. **Environmental Standard**: enhanced environmental standards through improved risk assessment, especially for the protection of water quality and aquatic ecosystems (*Japan, Netherlands, Norway, EC*); also for the protection of terrestrial organisms (*Japan*) – **4 respondents**
7. **Use Data Log and Reporting**: Establishment/implementation of pesticide *usage log/data* reporting/collection systems (*Australia, Ireland, EC*) – **3 respondents**.

8. **Inter-agency Collaboration** (e.g. with agriculture, natural resources, conservation authorities) to offset the cost of adopting reduced risk pesticides and pest management, and to better communicate goals for pesticide risk reduction to them (*New Zealand, US*); enhanced co-operation among different ministries for the implementation of the Basel and Stockholm conventions (*Slovak Republic*) – **3 respondents**.
9. **Obsolete Pesticides and Used Containers**: elimination of obsolete stocks by 2006 (*Slovak Republic*); extended waste treatment programmes (for used containers) and collection of obsolete pesticides (*Hungary*) – **2 respondents**.
10. **Labelling**: Implementation of the outcome of a major labelling review (*Australia*); better use of labels (*Hungary*) – **2 respondents**.
11. **Non-agricultural Sectors**: focus on horticultural (*Sweden*) and other non-agricultural sectors including home and garden, railways, and leisure industry (*UK*) – **2 responses**.
12. **Use of Quality Control and Quality Assurance (OC/OA)**, Hazard Analysis Critical Control Point (HACCP) and stewardship programmes by industry (*Australia, Korea*) – **2 respondents**

Each of the following was listed **by at least one country** as needing further work domestically:

1. Establishment of a mechanism for adverse effects/poisoning reporting (*Australia*);
2. Better implementation of worker safety measures (*Netherlands*);
3. R&D in models for risk assessment, combination effects of different chemicals, and pest forecasting/warning system and treatment thresholds (*Norway*);
4. New emphasis on economic/cost-benefit analyses as part of the approval process (*Norway*);
5. Efforts to meet targets to reduce pesticide use and increase organic farming (*Norway*); and
6. Establishment of IPM standards, Pre-Harvest Intervals (PHI) for greenhouse farming, and worker re-entry intervals in field applications (*Korea*).

Areas for international collaboration including through the OECD Pesticides Programme

55. Countries were asked to identify the best areas for international collaboration, and what the OECD Pesticides Programme could do to help them enhance pesticide risk reduction efforts. The following areas were identified by **several respondents**, listed in descending order.

1. **Registration-Work-sharing in Reviews and Evaluations** including harmonisation in approaches to risk assessments, core data requirements, timelines for reviews and increased use of electronic technology for registration and re-registration (*Australia, Canada, Ireland, Netherlands, Switzerland, EC*) – **6 respondents**.
2. **International Information Sharing** including *with developing countries*, participation in IFCS and SAICM, e.g. the integration of OECD achievements in the domain of pesticides to concrete measures of SAICM (“OECD can perform soft pressure on these countries”) (*Canada, Slovenia, USA*); and *at regional levels* (i.e. CEUREG for *Hungary*, and the Nordic Ministers of Agriculture for *Norway*) – **5 respondents**.

3. **Analyses of Risk Reduction Programmes/Instruments & Development of Indicators:** Evaluations and analyses of *national plans/programmes/strategies* for pesticide risk reduction, including a survey and information exchange on *best practices* in national risk reduction initiatives, identification of cost-efficient *policy instruments* for risk reduction, including via *economic/cost-benefit analyses* -- (**Canada, Denmark, Germany, Slovenia**), with a special focus on the development and use of *indicators/quantitative measurements of success* as evaluation tools, especially for voluntary programmes (**Germany, US**) – **5 respondents**.
 4. **Standards for Pesticide Handling & Use:** Information exchange on *approaches to/standards for use and handling*, possibly towards harmonised *standards for training and certification/licensing* of operators/applicators and for *equipment/sprayer registration and calibration systems* (**Denmark, Ireland, EC**) – **3 respondents**.
 5. **Documentation/Sharing of Sales and Use Data:** (**Canada, Germany, EC**)--**3 respondents**
 6. **Guidance on GIS-based information** and data collection and analyses to facilitate *monitoring of ongoing trends* and to *identify hot-spots*, possibly to a common standard at national and regional levels, to allow governments to better target their efforts (in enforcement and extension services) (**Germany, Ireland**) – **2 respondents**.
 7. **Development of OECD-wide Criteria for National Compliance Programmes** to improve compliance with regulations for safe handling of pesticide and to help identify measures to improve the level of compliance - the current lack of safeguards against violation of the condition of use for pesticides cited by some as one of the least successful areas in the last 10 years (**Canada, Germany**) – **2 respondents**.
 8. **Risk Assessment Models:** development of *risk assessment models* and *sharing data* obtained through monitoring programmes (**Norway, EC**) – **2 respondents**.
 9. **Development of International Code/Strategy on IPM** or good plant protection practices, perhaps based on a survey on such codes or guidelines (**Germany, EC**) – **2 respondents**.
56. There were some useful suggestions for the future work of the OECD Pesticides Programme which were mentioned **by at least one respondent** and merit consideration. They were:
1. Include retailers, food processors and international consumer protection associations at OECD discussions and in projects (**Germany**);
 2. Encourage more member countries to adopt the OECD Guidelines for the registration of biological pesticides (**US**); and
 3. Share information regarding adverse effects (**Canada**).

Summary of Issues/Areas Identified for Future National and International Work

57. While some issues were identified as national priorities, the same issues were also identified as areas for international collaboration. In some responses, it was not clear if an issue was listed as a domestic priority or as a proposed area of work for the OECD Pesticides Programme, or both. In any case, some of the issues of national priority and those recommended for international collaboration clearly overlap. Also, where numerous respondents identify the same issue as a domestic priority for the coming years, it may benefit from information exchange and joint examination through the OECD Pesticides Programme.

58. The following table summarises the issues identified for national and/or international work in the coming years, listed in descending order. The Working Group on Pesticides used this information as a basis for developing the risk reduction elements of its Work Programme for the period 2006-2008.

Issues and Topics for Future Domestic and International Work Identified by Member Countries

<i>Issue/Topic</i>	<i>Domestic Agenda (number of respondents)</i>	<i>Areas for International Collaboration (number of respondents)</i>
Policy formulation and evaluation	National strategy/plan/programme, policy instruments; <i>Australia, Norway, Sweden, Slovenia, UK, EC (6)</i> Evaluation using targets and indicators; <i>Australia, Hungary, Norway, Switzerland UK, USA (6)</i>	Analysis of best practices, guidance on economic analyses of policy instruments and on developing indicators: <i>Canada, Denmark, Germany, Slovenia, USA (5)</i>
Registration and re-registration	Implementation of revised regimes: <i>Hungary, New Zealand, Switzerland, EC (4)</i> Incorporate comparative assessment, substitution principle: <i>Norway, EC (2)</i>	Harmonisation in approaches to risk assessments, core data requirements and review timeline: <i>Australia, Canada, Ireland, Netherlands, Switzerland, EC (6)</i>
Training and certification of users/advisors; certification of equipment	<i>Australia, Ireland, New Zealand, Sweden, EC(5)</i>	Standards for users, training/certification: <i>Denmark, Ireland, EC (3)</i>
Surface and groundwater monitoring	<i>Australia, Hungary Netherlands, Sweden, Switzerland, EC (6)</i>	Guidance on GIS-based data collection and analyses to facilitate monitoring of ongoing trends and to identify hot-spots: <i>Germany, Ireland (2)</i>
Use data log and reporting	<i>Australia, Ireland, EC (3)</i>	<i>Canada, Germany, EC (3)</i>
International information exchange (with developing countries, SAICM, IFCS; within regions)		<i>Canada, Hungary, Norway, Slovenia, US (5)</i>
Enhanced environmental standards	<i>Japan, Netherlands, Norway, EC (4)</i>	
Enhanced residue mentoring in food	<i>Australia, Ireland, Netherlands, Korea (4)</i>	
Inter-agency collaboration	<i>New Zealand, Slovak Republic, USA (3)</i>	
Development of standards, code/strategy on IPM	<i>Korea (1)</i>	<i>Germany, EC (2)</i>

Guidance/criteria for compliance programmes		<i>Denmark, Germany (2)</i>
Adverse effects/poisoning reporting	<i>Australia (1)</i>	<i>Canada (1)</i>
Model for risk assessments	<i>Norway (1)</i>	<i>EC (1)</i>
Obsolete pesticides and used containers	<i>Hungary, Slovak Republic (2)</i>	
Labelling	<i>Australia, Hungary (2)</i>	
Non-agricultural sectors	<i>Sweden, UK (2)</i>	
Use of Quality Control, Quality Assurance (QC/QA)	<i>Australia, Korea (2)</i>	
Adoption of the OECD Guidelines the for the registration of biological pesticides		<i>USA(1)</i>
Inclusion of retailers, food processors, international consumer protection associations in OECD discussions/projects		<i>Germany (1)</i>
Better worker safety	<i>Netherlands (1)</i>	
Pest forecasting	<i>Norway (1)</i>	
Cost/benefit analyses as part of approval process	<i>Norway (1)</i>	

PART C - MISCELLANEOUS AND OPTIONAL QUESTIONS

59. During the development of the survey questionnaire in early 2004 with the participation of member countries, it was agreed to include a section on miscellaneous and/or specific questions that some countries wanted to ask other countries. The following sections summarise the results based on the eighteen responses.

a) Is aerial spraying authorised? If so, under what conditions?

60. Eleven respondents (*Australia, Canada, Germany, Hungary, Japan, Korea, New Zealand, Netherlands, Slovak Republic, Switzerland, UK*) indicated that aerial spraying is authorised in their countries, but subject to special provisions (only for products registered for aerial spraying; with special authorisation; only by licensed operators; according to exposure limits or spray drift guidelines).

61. Three respondents (*Ireland, Norway, Sweden*) indicated that aerial spraying is not permitted in their countries, but in rare cases, derogations are possible. In *Slovenia*, it is not allowed.

b) How are the problems of private/amateur use being addressed?

62. Five countries (*Australia, Japan, Korea, New Zealand, Switzerland*) indicated that home and garden use products are subject to the same risk assessment framework as agricultural pesticides, but generally only low toxicity pesticides with packaging size restriction are allowed. *Japan* and *New Zealand* added that guidance on pesticide use for private/amateur users has been established and distributed through local governments and retailers, but more work is still needed. *Canada* and the *UK* have legal registration regimes for such use, but stress the importance of education, communications and advice/guidance.

63. Six countries (*Germany, Hungary, Netherlands, Norway, Sweden, UK*) indicated that only a few substances and certain products with low toxicity or diluted and ready-to-use products are authorised for amateur use, and are listed in a certain category for such use, sold only in small packages, labelled for home and garden use, and in *Norway* with a high environmental tax. *Hungary* reported problems with low user awareness and knowledge on proper handling.

64. *Ireland* responded that no problems with amateur use have been encountered.

c) How is the effectiveness of communication and information provision ensured?

65. Eleven countries (*Australia, Canada, Germany, Japan, Hungary, Ireland, New Zealand, Norway, Sweden, Switzerland, UK*) responded to this question, and all of them indicated that changes in legislation including those related to authorisations are documented in official gazettes and directly communicated to stakeholders. Such information is also disseminated through web-sites, extension services, state/prefecture/local governments and farmers' cooperatives/associations, seminars and workshops.

66. *Japan* and *New Zealand* indicated that no evidence or evaluation of the effectiveness of present communication methods exists, while *Ireland* indicated that effectiveness needs to be improved. *Canada* has carried out public surveys to assess the impact and success of communications and information

programmes, while the *UK*'s regular stakeholder satisfaction surveys cover issues including communication. *Norway* finds it difficult to distribute information that reaches all users and uses.

67. The *Netherlands* indicated that government subsidies are provided to stimulate transfer of knowledge and information on risk reduction practices.

d) Is the use of “low-risk pesticides” permitted without registration?

68. Eleven countries (*Canada, Germany, Hungary, Ireland, Korea, New Zealand, Norway, Slovak Republic, Slovenia, Switzerland, UK*) responded “No” to this question, specifying that all products marketed as plant protection products must be approved.

69. Some countries indicated that some “low risk pesticides”, including those that act by physical means, are exempted from registration. *Japan* reported that there is a special category designated as Specific Plant Protection Substances that can be used without registration, which presently includes only baking soda and table vinegar as fungicides. *Sweden* exempts approval for pesticides acting by physical means such as soap. The *Netherlands* indicated that some low risk pesticides are exempted from regulation after careful consideration of possible risks.

e) Is tank-mix application authorised?

70. Nine countries (*Australia, Canada, Germany, Hungary, Ireland, Korea, Norway, Slovak Republic, UK*) responded that tank-mix applications are authorised but subject to certain provisions (e.g. relevant assessments of compatibility and/or efficacy; labelling).

71. *Japan* indicated it is not recommended, but government provides guidance for tank-mix applications, and in *Switzerland*, authorisation is exempted only in cases where a defined mix is needed and/or a reduced application rate is recommended with another pesticide.

72. *Sweden* indicated that approval is not required for tank-mix.

f) Are pre- and post-treatment activities (i.e. mixing, cleaning) specifically addressed and how?

73. *Hungary, the Netherlands* and *Sweden* indicated that both pre- and post-treatment activities are addressed in regulations. *Germany, Japan, Korea, Netherlands, Norway* and the *UK* responded that these issues are addressed in information campaigns, code of practice for safe pesticide handling and through advisory/extension services. *Norway* reported the treatment of this subject in mandatory user authorisation courses.

74. In *Australia*, pre-and/or post-treatment activities are assessed for occupational exposure and in *Ireland* for environmental impacts. *Canada* and *Switzerland* indicated that they are addressed through label instructions. In *Slovenia*, they are addressed in the condition for applying for financial support.

g) What are the systems in place for gathering information on pesticide poisoning incidents?

75. *Canada, Germany, New Zealand* and *Slovak Republic* indicated that physicians and/or hospitals are required to report poisoning or suspected cases to a national agency (e.g. poison centre) for analysis. *New Zealand* noted that few such reports are ever received, and there is believed to be under-reporting. In the *Netherlands*, worker exposure accidents must be reported to the Labour Inspectorate of the Ministry of Social Affairs, and poisoning incidents to the national poisons information centre.

76. *Japan* responded that information on accidents including poisoning is collected annually through a special campaign for the prevention of pesticide poisoning. In the *UK*, poisoning incidents are investigated by the Health and Safety Executive through its Pesticide Incidents Appraisal Panel, with information provided by local authorities.

77. *Australia, Canada* and the *Slovak Republic* reported that registrants are required to provide any new information which indicates that a product may not be safe. The *Australian* national registration authority recently launched an Adverse Experience Reporting Programme, which is accessible to the chemical and medical industries and the general public. *Canada* is currently developing regulations to specify the types of information that must be reported and the timeframe.

78. *Norway* reported that there is no special system in place.

h) What are the systems in place for gathering information on pesticide impacts on vulnerable groups?

79. *Germany* and *Norway* responded that there is no special system in place for gathering information on pesticide impacts on vulnerable groups. *Japan* indicated that research is carried out to investigate children's behavioural patterns for risk assessment by the Ministry of Environment, while another responded that some studies are done on occupational exposure, but nothing specifically for vulnerable groups such as foetuses, infants and children. The *Canadian* Institute of Child Health had held a special symposium on children's health and environmental contaminations. In the *Netherlands* and the *Slovak Republic*, the national poison centre/toxicological information centre monitors and reports pesticide impacts on vulnerable groups such as children.

80. The *UK* and *Canada* reported that toxicity data evaluations for approval address reproductive and developmental toxicity, taking into account that children are physically smaller and their intake of residues are relatively higher.

3. ANNEX 1

The Second Risk Reduction Survey

Questionnaire

General guidelines for completing the questionnaire

- For each of the questions 1-4 regarding pesticide risk reduction efforts of your country over the last decade, please summarise your answers in **2 pages maximum**.
- If appropriate, you may provide **links to relevant web-sites** where additional details are available (e.g. ex-post evaluations of earlier risk reduction policy of your country, cost-benefit study reports, etc.), preferably in English.
- For your reference, Part 2 of the report on the first risk reduction survey (1994-5) contains **the original survey responses** in a table format and contact persons, available at:
http://www.oecd.org/document/60/0,2340,en_2649_34383_2073276_1_1_1_1,00.html.
- Where relevant and possible, please provide information on **both agriculture and non-agriculture sectors** (e.g. gardening, amenity use, private/amateur use).
- Please provide **contact person(s)** in your country who could be contacted during analyses of the survey responses.

Part A: Evaluation of Pesticide Risk Reduction Efforts since 1994/5

What activities were undertaken in your country following the recommendations of the Uppsala Workshop? (See **Annex** for the recommendations of the Uppsala workshop.) Please provide details in answer to the following questions.

1. Please provide a brief introduction of the policy framework/context for pesticide risk reduction efforts in your country. Have there been evaluations of the policies/plans and goals/targets mentioned in the first survey (1994/5)? If not, please state reasons. If so, what were the findings?

- Have data and indicators been used in the evaluations to measure risk reduction achievements? What has been the experience with their use? What, if any, obstacles were identified (e.g. lack of pesticide use data)?
- Have economic analyses been used in the evaluations? If so, were they *ex ante* and/or *ex post* evaluations? (If both were carried out, did the *ex post* evaluation after a policy was implemented confirm – or not – the *ex ante* predictions?) What were the costs and benefits? **(If your country nominated someone for the Network of Experts on economic analyses established earlier this year, you may want to involve the experts for answering this question.)**

2. Have there been major modifications, or any new policies, strategies, goals or targets (both qualitative and quantitative) introduced since the first survey in 1994/5 or the most recent Risk Reduction Update provided by your country?

- Since the first survey focused on agricultural pesticides, please provide also information on policies, plans or goals addressing non-agricultural sectors, if relevant or available.

3. What are the major risk reduction achievements in your country over the last 10 years? What were the reasons behind their success?

- What policy tools or activities worked or were most cost-effective? What has been best practice? Examples can include:
 - regulation and enforcement,
 - standardisation of application equipment and technical verifications (mandatory or voluntary?),
 - voluntary programmes,
 - taxes, subsidies/incentives, and other economic instruments,
 - labelling (Do users read them? Any information/evidence of effectiveness of labels?),
 - other information/communication tools,
 - education/training (mandatory or voluntary?),
 - extension/advisory service,
 - demonstration farms,
 - research and development.
- How were stakeholder involved in defining and deciding on activities?

4. Which ones have been least successful or faced difficulties and what were the reasons (e.g. other conflicting policies or programmes)?

- See the list in 3 above for examples of policy tools/activities.

Part B: The Next 10 Years

5. Future Work

- Where are the most important areas for future work or gaps that need to be filled?
- Which are the best areas for international collaboration? What could the OECD Pesticides Programme do to help countries enhance pesticide risk reduction efforts?

Part C: Optional

6. (OPTIONAL) Miscellaneous/specific questions some countries/organisations wanted to ask other countries in the questionnaire

- Is aerial spraying authorised? If so under what conditions?
- How are the problems of private/amateur use being addressed?
- How is the effectiveness of communication and information provision ensured? (e.g. when informing the regulated community about changes or modifications to authorisations.)
- Is the use of “low-risk pesticides” permitted without registration?

- Is tank-mix application authorised?
- Are pre- and post-treatment activities (i.e. mixing, cleaning) specifically addressed and how?

New Questions (Added 28 June 2004)

- What are the systems in place for gathering information on pesticide poisoning incidents? (especially among farmers and pesticide operators)
- What are the systems in place for gathering information on pesticide impacts on vulnerable groups? (e.g. fetuses, infants, children)

PART II

AUSTRALIA

Part A: Evaluation of Pesticide Risk Reduction Efforts since 1994/5

1. Introduction of the policy framework/context for pesticide risk reduction

Australia's risk reduction activities are carried out by a number of different organisations at national and state level. The main focus is on pesticide risk reduction through restrictions on supply and use of high risk chemicals, access to training in the use of chemicals (including mandatory requirements for training in some jurisdictions), improved management of pests and diseases, more effective use of pesticides and in some jurisdictions mandatory requirements to keep records of pesticide use.

Currently the policy framework/context for pesticide risk reduction efforts in Australia fall into the following main areas:

- A national *registration* scheme which regulates the manufacture, supply, distribution and sale of pesticides up to the point of retail sale;
- State-run *control-of-use programs* which aim to ensure that pesticides are used safely and only for the purpose for which they are intended – these programs include both regulatory and educational type activities;
- A number of *research and development programs* run at both the national and state level, with the general aim of improving the efficiency of pesticide use and reducing our dependence on chemical pesticides for pest and disease control; and
- *Residue and environmental monitoring* programs and feedback loops.

Policy evaluations

A number of reviews of the agvet chemicals management system have been conducted including:

- A National Strategy for Management of Agriculture and Veterinary Chemicals http://www.affa.gov.au/corporate_docs/publications/pdf/oper_env/armcanz/agvet.pdf
- The Australian Academy of Technological Sciences and Engineering Report, 'Pesticide Use in Australia' <http://www.atse.org.au/index.php?sectionid=199>
- The Allen Report and the National Chemicals Taskforce Report.
- The Cox Report 'The Australia Agriculture and Veterinary Chemicals Management System', <http://www.apvma.gov.au/publications/cox.pdf>

Various successes and challenges were identified through these reviews. There is general agreement that the current system is effective and its strengths should be retained.

The National Strategy for Agricultural and Veterinary Chemicals (1998) seeks to maximize the contribution of agvet chemicals to national prosperity while minimizing undesirable impacts on human health, the environment and trade. The National Strategy has been transformed into a risk management framework underpinning the policy areas of work.

The Australian Academy of Technological Sciences Report (2002) considered only the rural use of pesticides concluded (among other things) that agrochemicals are essential to food production and help producers to remain competitive in international markets. The report also concluded that there is little feedback on quantities of pesticides used or on adverse effects, and that individual State and Territory regulations need closer harmonization.

The Allen Report (2002) looked at changes that may be required to the Australian agvet chemicals management system to meet expected challenge over the next 10 to 15 years. Future challenges identified included changing community standards in response to rising awareness of risks and regulatory failures, technology and scientific advances such as GM technology, the trend to greater international harmonization of regulation, increased development costs for new chemicals and the loss of access to chemicals for the small (in global terms) Australian market.

The National Chemicals Taskforce Report addressed the issues associated with ecologically sustainable chemical management. The report found that good linkages are required under the Australian institutional and legislative agvet framework. The Taskforce identified enhanced monitoring and investigation as key areas for action to improve our understanding of environmental impacts.

2. Modifications, new policies, strategies, goals or targets introduced since the first survey in 1994/5

The following are some of the new strategies arising out the recent reviews of Australia's agvet management system:

- Develop and implement national *operating principles* and agreed *performance outcomes* for control of use of agvet chemicals and improved feedback mechanisms.
- Increased *training* and supervision for agvet industry operators.
- Revise chemical *labels* and develop policies to encourage increased use of clear directions and plain English text.
- Establish a national comprehensive and *harmonized residue monitoring program* for food and the environment and provide for a wider dissemination of results.
- Establish a comprehensive and integrated pesticide *use reporting system*, database and *adverse effect registers* focusing especially on human health and the environment.
- Encourage the *development of risk reduction strategies* in all aspects of agvet chemical management including the use of QA, HACCP and stewardship programs in the agvet chemical industry.

Work has commenced on identifying appropriate mechanisms to achieve a number of these objectives.

3. Major risk reduction achievements over the last 10 years

Continuous improvements in Australia's National Registration Scheme for regulation of agvet chemicals, establishment in 1995 include implementation of:

Legislative change – registration and approval of chemicals

- Registrants must now provide the APVMA with new information that they are aware of whilst an application is being assessed.

- If the APVMA identifies that product *labels* do not contain adequate instructions it can require registrants to vary label instructions without undertaking a formal review.
- The introduction of two new tiers to registration and supply of agvet chemicals, listed registration of chemicals that comply with a standard and reservation from registration provided certain conditions are met.
- The implementation of *data protection* on 1 Jan 2005 for new products and extensions of use for existing products will provide a greater incentive to make available new lower risk and more efficacious chemicals.

Legislative change – control-of-use

- Introduction of *mandatory training of users* in some jurisdictions for all farm chemical users, other jurisdiction are mandate training for commercial users *and advisers* and/or restriction of high-risk chemicals to trained persons.
- Introduction of *mandatory record keeping* of pesticide use in some jurisdictions.

Operational

- The implementation of the requirement for manufacturers to keep records of analysis of active constituents used in the manufacture of product that support compliance of active with the APVMA standard for that active and regular audits of these records.
- The Existing Chemical Review Program (ECRP) and Special Review Program have been combined into one program of targeted reviews of specific issues allowing for greater efficiency and timeliness for initiating and completing reviews.
- The implementation of a structured program for the *reporting of adverse* experiences resulting from the use of pesticides by the public, government and state departments and manufacturers.
- The implementation of a Manufacturing Licensing Scheme for *veterinary chemicals* including pesticides (ectoparasiticides).
- The development of a risk assessment framework and risk management strategies relating to potential risks Australia's *trade in agricultural produce* as part of the registration process.

Continued registration may require *environmental monitoring for ground and surface water* contamination by pesticides, for example endosulfan. This enables implementation of measures to reduce water contamination, for example tighter controls and restrictions on product use resulting in the adoption of improved agricultural practices and hence environmental protection.

Other areas in which the APVMA has achieved/implemented national risk reduction strategies include:

- Initiation of a major reform agenda to address timely availability of safe and effective chemicals for *minor use*.
- Undertaking a major *review of the labelling* of pesticides and veterinary medicines.
- Since 1994-5 the completion of 31 reviews involving 43 chemicals and 390 products under the chemical review program. A further 49 chemicals covering 991 products are currently under review.

Whilst Australia's agvet legislation does not include regulation of IPM strategies, the APVMA does, where possible, *support IPM* in its regulatory approach. For example, initiatives have been developed with relevant government authorities to implement resistance management strategies that incorporate IPM, and to include reference to such strategies on relevant product labels. Resistance management strategies underpin the registration of genetically modified organisms (the express pesticidal genes) as well as the approval of the use of pesticides on pesticide tolerance genetically modified crops. Efficacy trial requirements for veterinary pesticides (ectoparasiticides) must address long term strategic control and pest management.

4. Least successful strategies which faced difficulties

Strategies that have faced difficulties include *relying on training requirements through industry stewardship program*.

While much work has been done to make available and/or mandate user training or accreditation difficulties arise out of *inconsistent approaches to mandatory training requirements by different jurisdictions*, problems with interpretation of competency standards and ensuring the quality of training and assessment.

Part B: The Next Ten Years

5. Future Work

Future work will be in the areas of:

- Working towards *harmonized risk assessment, work sharing and work saving among OECD countries* and increased use of *electronic technology*.
- Continuous *improvement in legislative provisions, training and education* (including the needs of persons from non-English speaking backgrounds and/or poor literacy skills) and *monitoring*.
- Implementing national *operating principles* and agreed *performance outcomes* for control of use of agvet chemicals.
- Implementing the outcomes of major *labeling review* (including adoption of GHS, as appropriate).
- Establishing a *national residue monitoring program* for food and the environment and a mechanism for dissemination of results.
- Establishing a *pesticide use reporting system, database and adverse effect registers* focusing especially on human health and the environment.
- Encouraging increased use of *Quality Assurance (QA), Hazard Analysis Critical Control Point (HACCP)*, and *stewardship programs* in the agvet chemical industry.

Part C: Optional

6. Miscellaneous/specific questions some countries/organisations wanted to ask other countries in the questionnaire

Is aerial spraying authorised?

In Australia aerial spraying is authorised and aerial operators must be licensed. Australia is currently developing a spray drift guideline that addresses data requirements, assessment processes and risk mitigation strategies for spray drift.

How are the problems of private/amateur use being addressed?

In Australia pesticides for use in the home garden (i.e. private or amateur use) are subject to the same risk assessment framework as other agricultural or veterinary chemical products. In general pesticides are only permitted for use in the home garden if of low toxicity. Pack size restrictions also apply.

How is the effectiveness of communication and information provision ensured?

In Australia the focus of communication is by direct communication with stakeholders, official government gazettes, web-based information including list servers and regular newsletters as well as presentation at conferences, agricultural field days and industry workshops. From time to time the APVMA also published articles in peer reviewed journals. For example a summary of adverse experience reports relating to veterinary chemicals is regularly published in the Australian Veterinary Journal. In addition to these the APVMA has liaises through a number of industry, community and registration committees.

Is the use of “low-risk pesticides” permitted without registration?

New legislation now allows for a tiered approach to registration, including registration according to a standard and ‘reservation’ from registration.

Is tank-mix application authorised?

Tank mix application is not permitted without formal assessments of relevant data and specific label directions to that effect.

Are pre- and post-treatment activities (i.e. mixing, cleaning) specifically addressed and how?

In Australia both pre and post-treatment activities are assessed for occupational exposure during these activities. In fact all activities in relation to chemical exposure are assessed as part of the toxicology and occupational health and safety assessments undertaken by the APVMA. Re-entry activities are specifically addressed in order to provide appropriate re-entry advice.

What are the systems in place for gathering information on pesticide poisoning incidents?

Registrants are required to provide any new information that they are aware of which indicates products may not be safe. The APVMA has recently launched an Adverse Experience Reporting Program, which is accessible to the chemical and medical industry, as well as users and the general public. There are also national and state based programs in operation to gather information on poisoning (including pesticides).

Contact Person:

CANADA

Part A: Evaluation of Pesticide Risk Reduction Efforts since 1994/5

1. Introduction of the policy framework/context for pesticide risk reduction efforts

The Pest Management Regulatory Agency (PMRA) regulates pesticides imported, sold or used in Canada nationally under two major federal statutes: the Pest Control Products Act (PCPA) and Regulations, and the Food and Drugs Act and Regulations. The PCPA provides authority to regulate the use of substances that claim to have a pest control use. It also regulates substances contained in pest control products, such as formulants, adjuvants and contaminants. The PMRA, on behalf of the Minister of Health, administers the PCPA, registering pest control products, re-evaluating registered products and setting maximum residue limits (MRLs) under the Food and Drugs Act. The products regulated are diverse, covering pesticides used in agriculture, forestry, industry, public health and household situations, and includes biocides as well as microbial pesticides. The provinces and territories further regulate the sale, use, storage, transportation and disposal of registered pesticides in their jurisdictions as long as the measures they adopt are consistent with any conditions, directions and limitations imposed under the PCPA or other federal legislation.

In 2000, the PMRA outlined *a federal approach to pesticide risk reduction* supported by four pillars:

- product assessment and regulation for health and environmental protection;
- scientific research and monitoring to support effective decision making, promote greater awareness and foster public confidence;
- sustainable pest management, including the principles and practices of IPM;
- user and consumer awareness, involvement and communication.

The regulation of pest control products must be undertaken within the broader perspective of sustainable pest management — which is fully consistent with the principles of pollution prevention and the principles and practices of *Integrated Pest Management (IPM)*. This broader perspective depends on maintaining the effectiveness of federal/provincial/territorial collaboration. It also requires well informed users and consumers.

Effective regulation of pest control products, in the context of sustainable pest management, depends on *high quality science* based on solid research. High quality science offers the best assurance that the most serious health and environmental hazards will be tackled as a matter of priority, and that emerging hazards will be identified promptly. *International harmonization* offers excellent opportunities to ensure high standards of pest management regulation in Canada and among our main trading partners. It also supports cost-effective regulation, including effective use of scarce scientific resources to protect health and the environment.

The PMRA also coordinates the development of *voluntary IPM strategies* across the country in cooperation with various partners including: agricultural groups, manufacturers, federal departments, provinces, research institutions and non-governmental organizations.

Provinces and territories administer a pesticide management program that includes education and *training programs, the licensing and certification* of applicators, vendors and growers as well as the issuing of permits for certain pesticide uses. Other important roles, often carried out in cooperation with

PMRA regional offices, are those of *enforcement and compliance monitoring*, and response to spills or accidents. The provinces also carry out activities in cooperation with the manufacturing industry, including the collection of *obsolete pesticides* and the recycling of the *used pesticide containers*.

Evaluations

Policies and activities regarding pesticide regulation are reviewed and evaluated on an ongoing basis. The PMRA meets regularly with a Federal-Provincial-Territorial (FPT) committee consisting of representatives from pesticide regulators in each of the provinces and territories, and advisory councils including the Pest Management Advisory Council (PMAC) and Economic Advisory Council (EMAC) consisting of representatives from various industry and non-governmental organizations. Major policies and activities are consulted on through these groups and publicly during their development.

The *indicators* used to measure achievements are generally those tied to the ongoing business of pesticide regulation; that is, registration data (e.g. number of registrations through reduced risk initiatives, number of re-evaluations completed), development of new processes (e.g. development of new templates for joint submissions or reduced risk products), and compliance data. This type of information is available in a progress report from the PMRA website (<http://www.pmra-arla.gc.ca/english/aboutpmra/plansandreports-e.html>). The provinces and territories measure achievements using data collected by use surveys and databases, and IPM surveys.

Under the new PCPA, the PMRA will collect *information on pesticide sales*. The PMRA also makes use of data collected by other federal departments including data on environmental indicators monitored by Environment Canada, and sales data and use data collected in collaboration with Agriculture and Agri-Food Canada, Statistics Canada, or the provinces.

Economic analyses are not normally conducted in support of registration or re-evaluation activities. However, this expertise exists in the federal Agriculture and Forestry departments.

2. Modifications, new policies, strategies, goals or targets introduced since the first survey in 1994/5

Risk reduction in Canada has continued to develop since the OECD Risk Reduction Survey in 1994/5. At that time, an independent review of the federal pesticide regulatory system, the Pesticide Registration Review (PRR), had been recently completed. Recommendations for improvement included the formation of the Pest Management Regulatory Agency, which would be responsible for pesticide regulation in Canada, and for carrying through many of the recommendations of the PRR for pesticide risk reduction. PMRA policies and activities continue to involve *stakeholder consultation* early in the development of policies and throughout the lifespan of the activity.

The new Pest Control Products Act (PCPA) received Royal Assent in December 2002, and will come into force on a date yet to be determined. The Act will replace the existing Pest Control Products Act enacted in 1969, and is the culmination of more than ten years of consultation. Post-registration control of pesticides will be strengthened by requiring pesticide companies to report adverse effects. The new Act will require *re-evaluations* of older pesticides 15 years after they are registered and provide the Minister with the authority to remove pesticides from the market if required data are not supplied. The new PCPA will allow the PMRA to *share data evaluation reports with international regulators*, which will enhance the process for international work sharing of pesticides, and enhance harmonization so that Canadian growers have greater access to newer and, safer pesticides.

There has also been considerable effort towards risk reduction with the introduction of new policies and activities. A few of these are highlighted in the following paragraphs. For more information, please refer to the PMRA website at <http://www.pmra-arla.gc.ca>

The Commodity-Based Risk Reduction Program

The PMRA and Agriculture and Agri-Food Canada have been working together to support the development and implementation of commodity-based risk reduction strategies for the agriculture and agri-food sector. The aim is to support the sustainability of Canadian commodities through the development of strategies to address priority pest control issues identified by the growers.

In addition, the PMRA is contributing to commodity-based agri-food strategies for North America through the North American Free Trade Agreement (NAFTA). Coordinating selected IPM activities across North America will ensure wide availability of crop protection tools while enhancing free movement of commodities between nations.

Reduced-risk Products

The Agency recognized the need to encourage registration of new reduced-risk pesticides early on, and continues to work with a variety of stakeholders to improve access to these products as well as to encourage manufacturers to submit them for registration in Canada. The PMRA has, in large measure, harmonized its data requirements with the U.S. and benefits from a joint review process for reduced-risk chemicals and biopesticides. Joint review provides for reduced evaluation time for these products, and similar decision times in Canada and the U.S.

In May 2002, the PMRA introduced an initiative to further enhance access to reduced risk products in Canada. The PMRA Initiative for Reduced Risk Pesticides (<http://www.hc-sc.gc.ca/pmra-arla/english/pdf/dir/dir2002-02-e.pdf>) was extended to include priority review for reduced-risk products that were already registered in the United States but for which no Canadian application had been made. The program is designed to encourage pesticide manufacturers to apply for Canadian registration of reduced-risk products that are currently available in the U.S. For more information, see <http://www.hc-sc.gc.ca/pmra-arla/english/intern/oecd-e.html>

Promoting Sustainable Pest Management

Achievement of pesticide risk reduction requires working with partners at the federal and provincial/territorial level and with stakeholders, incorporating the concepts of Integrated Pest Management (IPM) and Integrated Crop Management (ICM).

By ensuring that pesticide applications are warranted, well-timed and performed in concert with other management practices, IPM can reduce possible adverse health or environmental effects. It can also extend the useful life span of a pesticide by delaying the development of resistance. The regulatory system also endeavours to optimize the use of conventional chemical pest control products by amending the rate, timing or method of application to reduce adverse impacts on naturally occurring beneficial organisms. The PMRA has undertaken a series of IPM Partnership Programs with grower organisations, other federal departments, provincial governments and stakeholders. Examples and descriptions can be seen at <http://www.pmra-arla.gc.ca/english/spm/spm-e.html>.

As part of the registration process, a detailed evaluation of efficacy data is conducted in order to ensure that the lowest effective rate is being proposed and the product is to be used in a manner representing good agricultural practice and is consistent with sustainable pest management.

Action Plan on Urban Use Pesticides

The Federal-Provincial-Territorial Action Plan on Urban Use Pesticides (<http://www.hc-sc.gc.ca/pmra-arla/english/pdf/hlawns/hl-ActionPlan-e.pdf>) was announced in October 2000, to help Canadians reduce their reliance on pesticides in the urban setting. Focussing on outdoor use of pesticides,

the Action Plan identified three key elements: the Healthy Lawns Strategy for Urban Pesticide Risk Reduction, Registration of New Reduced-risk Products and Product Re-evaluation.

Under the first element of the Action Plan, the Healthy Lawns Strategy for Urban Pesticide Risk Reduction, the PMRA, the provinces and the territories are helping Canadians to minimize the risks associated with pesticides for lawn care by emphasizing pest prevention, use of reduced-risk products and application of pesticides only when necessary. The second element under the Action Plan is registration of new reduced-risk products, as previously described in this section. The third element of the Action Plan is the priority re-evaluation of the most common chemicals in lawn care pesticides. The intent of these re-evaluations is to apply the most modern risk assessment principles, including additional safety factors to protect children, to products used in the urban setting.

The provinces and territories also play a substantial role in risk reduction in Canada. The Federal-Provincial-Territorial Committee is a key facet of consultation for all aspects of PMRA business, and a necessary conduit to provincial activities. The provinces/territories also undertake separate initiatives towards risk reduction, including further restricting use for protection of eco-sensitive areas within the province, use reduction activities, and the development and promotion of regional IPM activities.

Collection and Disposal of Obsolete Pesticides

This program, funded equally by CropLife Canada and the Federal/Provincial governments, has collected and safely disposed of over 650,000 kg of obsolete pesticides, making rural Canada safer from a health and environment standpoint. Through this initiative, designated collection sites are set up so farmers can safely dispose of unused and obsolete crop protection products at no cost to them.

Container Management

Since inception, this program has removed and recycled approximately 55 million containers from farmsteads and the environment. The empty pesticide containers are collected from over 1,200 sites across Canada. Currently, producers across Canada return on a voluntary basis approximately 70% of all containers shipped into the market, the highest percentage return rate in the world. The granulated plastic is recycled into fence posts for agricultural use, highway guardrail posts, or used for energy.

Toxic Substances

In March 1999, the PMRA became the first federal government organization to establish a plan to address the requirements of Canada's Toxic Substances Management Policy (TSMP). The TSMP was released in 1995 to guide the management of toxic substances and other substances of concern released into the environment. It calls for the virtual elimination of Track 1 substances (those that are toxic, or equivalent, under the Canadian Environmental Protection Act, predominantly anthropogenic, persistent and bioaccumulative), and for the full life cycle management of Track 2 substances to prevent or minimize their release. For more information about the TSMP, please see: <http://www.ec.gc.ca/toxics/en/index.cfm>.

Pesticide Sales Data Base

Canada has recognized that, in order to regulate pest control products appropriately and efficiently, there is a need for comprehensive information about the extent to which they are used. Such information is not only essential to follow trends of pesticide use over time and to track the effectiveness of risk reduction efforts, but it would also contribute to the ability of the PMRA and the provinces/territories to set priorities and to assess and mitigate health and environmental risks during new product evaluation as well as re-evaluation and special review of older pesticides. Regulations were developed to specify information requirements and reporting timelines, and were published for public comment in March 2004. Submitted representations are currently being carefully considered.

3. Major risk reduction achievements over the last 10 years

Risk reduction in Canada includes use of a variety of tools and activities. The particular tool chosen is specific to the issue, its desired outcome and the audience targeted. The success of different tools are therefore difficult to compare. The following are provided as examples of success applicable to the special circumstances of the activity itself. The common thread in the success for these activities is *stakeholder consultation*, early on and throughout the process.

Reduced-Risk Products Program

The program, described in question 2, involves a number of groups including two national regulatory agencies (U.S. EPA and the Canadian PMRA), pesticide manufacturing industry, and grower groups. The review of any single pesticide requires coordination of data submission, scientific review and decision making.

Pesticide education, training and certification

Education of those individuals who use and sell pesticides is recognized internationally as a key tool for risk reduction. The PMRA, in conjunction with the provinces and territories, released the Standard for Pesticide Education, Training and Certification in Canada for implementation across the country (<http://www.pmra-arla.gc.ca/english/fpt/edutran-e.html>). The Standard is a framework for educating pesticide applicators and vendors through provincial/territorial certification programs. It defines the minimum knowledge requirements for those who use and sell pesticides. It outlines terminology, certification categories, certification criteria, recertification criteria and reciprocity requirements.

Prior to the Standard, there was extreme variability in terminology, licensing practices, training, regulations and resources. The Standard was developed in order to move towards more uniform pesticide education programs. This initiative was undertaken recognizing that education is an area of provincial/territorial responsibility, but that strong federal/provincial/territorial cooperation was required. A key component of the success of this initiative is the strong interest of stakeholders involved for the protection of human health and the environment. The current Standard was developed, and is now being modified to harmonize with the U.S.

Collection and Disposal of Obsolete Pesticides (note: from CropLife website)

This program, funded equally by CropLife Canada and the Federal/Provincial governments, has collected and safely disposed of over 650,000 kg of obsolete pesticides, making rural Canada safer from a health and environment standpoint. Through this national initiative, designated collection sites are set up so farmers can safely dispose of unused and obsolete crop protection products at no cost to them.

The success of this initiative is linked to the common goal of the groups involved, and through consultation and communication, leading to the development of a program which addresses the needs of Canadians in a feasible manner.

4. Least successful strategies which faced difficulties

As discussed in the previous section, risk reduction activities may employ any combination from a variety of methods. The particular tool chosen is specific to the issue, its desired outcome and the audience targeted. The success, or lack of success, of different tools are therefore difficult to compare.

A key challenge to address in many of these activities is the resource differential often associated with a change in practice. For example, many stakeholders are reluctant to give up a proven method of pest control, with a proven track record of cost and efficacy for what maybe considered a relative unknown at a greater cost. This challenge is most often associated with alternatives for products being discontinued. Through information sharing and education the need for such changes can be demonstrated and the success of the program can be evidenced through changes in practice.

Part B: The Next Ten Years

5. Future Work

One of the most important areas for future work and international collaboration involve *increasing access to information*. Information sharing provisions already exist among much of the OECD, and this work should continue to develop as efforts towards harmonization and data sharing continue.

In the same way, information regarding *adverse effects reporting*, and *sales/use data* should continue to be made publicly available for use by regulators, and their transparent use of such data in the regulation of pesticides.

Furthermore, this *information should be shared with the rest of the world*, particularly developing nations. The OECD Pesticides Programme should participate internationally with other programs such as the Intergovernmental Forum on Chemical Safety (IFCS) and the Strategic Approach to International Chemicals Management (SAICM) to make information important for the regulation of pesticides available to developing countries.

There is a continued need to provide safer alternatives to many pesticides, and this is balanced by the requirement of access to a safe, reliable and affordable supply of quality food. Because pesticides can play a key role, it is important to provide growers with effective alternatives to existing pesticides, and that industry be encouraged to continue to develop *new reduced risk products*.

To improve access to such products developed in other nations, regulatory agencies need to align regulatory practices as much as possible while respecting sovereign rights. Progress in this area can be improved through efforts towards *harmonization of approaches for risk assessment, core data requirements and time lines for review*. The OECD has considerable involvement in this area, and work should continue to coordinate pesticide submissions globally and allow regulators to share the work of pesticide evaluation.

Part C: Optional**6. Miscellaneous/specific questions some countries/organisations wanted to ask other countries in the questionnaire*****Is aerial spraying authorized?***

Aerial spraying may be authorised by provinces for select products regulated for that application. If permitted, aerial application may only be performed by certified applicators (<http://www.pmra-arla.gc.ca/english/fpt/edutran-e.html>), within the conditions prescribed by the product label and may include instructions including weather conditions, timing of applications and buffer zones.

How are problems of private/amateur use being addressed?

Although the Canadian pesticides regulatory regime provides a framework for legally addressing such use, the most powerful tool is education and communication. An excellent example of such an activity is from the PMRA website (<http://www.pmra-arla.gc.ca/english/consum/consum-e.html>) and the Healthy Lawns program (<http://www.HealthyLawns.net>). Provinces are responsible for education and training for pesticide applicators.

How is effectiveness of communication and information provision ensured?

Public surveys may be analysed to assess the impact and success of communication and information programs. For an example, please refer to <http://www.healthylawns.net/english/pdf/HLHomeownerSurveyReport2003-e.pdf>

Is use of “low-risk” pesticides permitted without registration?

In Canada, pesticides are not categorized by relative risk. No pesticide will be registered if its use poses an unacceptable risk. Pesticides which may be considered “low-risk” pesticides must be also be registered with the PMRA. The PMRA is currently reviewing its approach to low risk pesticides.

Is tank-mix application authorised?

Specific tank mix applications may be authorized for select products under the conditions stipulated by the PMRA and included on product labels.

Are pre- and post-treatment activities specifically addressed?

Pre- and post-treatment activities are specifically described as appropriate on product labels.

What are systems in place to gather information on pesticide poisoning incidents?

Under the new Pest Control Products Act, both applicants and registrants will be obliged to report to the Minister any prescribed information relating to the health risks, or environmental risks of the product. Regulations are being developed to specify the types of information that must be reported and the timeframes for reporting the information.

The medical community and individuals will also be encouraged to report adverse effects.

Currently, Poison Control Centres compile poisoning incident information for internal use and sharing with other health officials and PMRA. The PMRA has initiated contact with the Director of a Poison Control Centre in Canada and with medical experts to determine the best means of ensuring physician involvement in reporting pesticide related poisonings. Preliminary discussions included the necessity for

developing specific educational programs for provincial medical schools and regional medical institutes to alert the medical community on the necessity for and how to report pesticide related adverse effects.

To ensure that there is comprehensive exchange of reported information, PMRA is also liaising with the ProdTox project. ProdTox is a system that is under development for accessing and integrating existing databases from Canadian Poison Control Centres (PCC). Once this project is implemented, the accumulated knowledge base of health hazard information on products will be able to be shared through a secure Web-based network. The project will permit local, provincial and national access to accumulated clinical data, product information and treatment guidelines. The information can be used to enhance prevention and regulatory programs at all levels. The alert function of ProdTox, with timely on-line information on poisonings, will facilitate rapid intervention for poisoning incidents.

What are systems in place to gather information on impact on vulnerable subgroups?

The PMRA routinely requires the submission of data related to potential adverse effects on reproduction and fetal developmental toxicity. Reproductive and developmental toxicity studies are evaluated to characterize the risks a particular chemical may pose to mammalian reproductive capabilities, pregnant animals and their developing offspring. Additional tenfold margins of safety are applied to protect infants and children from risks posed by pesticide residues in food and when pesticides are used in and around homes and schools, unless there are reliable data to indicate that a different margin of safety would be appropriate.

In May 1997, the Canadian Institute of Child Health (CICH) held a national symposium on environmental contaminants and the implications for child health. The PMRA co-sponsored the three-day symposium, assisted in the development of the program, and participated in many of the sessions. Proceedings from the symposium are available from the CICH website, <http://www.cich.ca>

The symposium represents one small component of a long-term project undertaken by the CICH to comprehensively study the impact of environmental contaminants on children's health. The project is intended to:

- find out what is known about possible links between children's health problems and environmental contaminants;
- develop an overview of the major activities and programs of groups in the provinces and territories on the subject of health and environmental issues affecting children;
- disseminate information at the national level to regions and communities across Canada;
- encourage industry and government to recognize and address key environmental health hazards; and
- build awareness of key environmental problems among law and policy makers, families and children.

Contact Person:

Richard Aucoin
Chief Registrar
Pest Management Regulatory Agency
2720 Riverside Drive
Ottawa, Ontario K1A 0K9, Canada
Telephone: (613) 736-3705
Fax: (613) 736-3707

DENMARK

Part A: Evaluation of Pesticide Risk Reduction Efforts since 1994/5

1. Introduction of the policy framework/context for pesticide risk reduction efforts

Agriculture accounts for 2/3 of Denmark's surface area, and does thus have a profound influence on the country's landscape, nature as well as on pollution of the environment.

Intensified agricultural production methods, including increased consumption of pesticides, caught the public eye and media in the mid-eighties. Concerns for the pressure that the pesticide consumption put on health and environment has been a driving force in the Danish pesticide policies ever since. Monitoring and finds of pesticides in groundwater (used as drinking water with no treatment apart from aeration and basic filtration) has since the mid nineties been the major driving force.

The Danish pesticide policy has since the first *action plan* was launched in 1986 been based on a two pronged strategy namely:

- a strict registration system, and
- reduction of the use of pesticides

The chemical act was amended to the effect that it would no longer be possible to grant approval to products considered being especially hazardous to health or especially harmful to the environment. The amendment also provided legal basis to carry out a *re-evaluation* of all pesticides already on the market. The re-evaluation was carried out in the years 1989-1995.

A *quantitative pesticide reduction goal* for agriculture (active substances and treatment frequency) and fixed timeframes has been set. The rationale behind the reduction goal is that pesticides per se are toxic substances, and as it is extremely difficult to determine an environmental acceptable level for the consumption of pesticide the use must be reduced as much as possible, e.g. by implementing best practice.

The instrument to reach the goals has been a mix of voluntary, compulsory and economic measures:

Voluntary measures:

- development and implementation of decision support systems, extension, information groups (extension officer and farmers), demonstration farms, and research

Compulsory measures:

- training of all farmers; 12 hour (health and environment, no tests) or 72 hour (health, environment and pest control, 4 tests)
- spraying logbooks (pesticide, dose, crop, field and date must be stated)
- spot inspections of spraying equipment

Economic measures:

- pesticide tax (value added tax: insecticides and soil disinfectants 54%, herbicides, fungicides and growth regulators 33%)
- economic support to organic farming, pesticide free cultivation and no spray buffer-zones

The tax reflects the treatment frequency. The tax yield is mainly channelled back to the farmers by a reduction of a land tax. A smaller part of the yield is used to support organic farming, research and monitoring and activities related to the pesticide action plan. In addition to this, administration of the approval system for pesticides is also financed by the tax.

In 1998 the Minister of Environment and Energy and the National Association of Local Authorities in Denmark, the Association of County Councils in Denmark and the Municipalities of Copenhagen and Frederiksberg made an agreement to phase-out the use of plant protection products on public areas.

More information on Danish pesticide plans can be found on: <http://www.mst.dk>. Look for: Chemicals – Pesticides – Action Plans and other agreements

Indicators used to measure risk reduction achievements

The main indicator to measure risk reduction achievement is in Denmark the Treatment Frequency which is the calculated average number of pesticide applications in agriculture per year, provided a fixed standard dose is used. The Treatment Frequency is regarded as an indicator for the spraying intensity as well as an overall indicator of the environmental impact of pesticides. Projects under the Danish Pesticide Programme show a relation between the treatment frequency and bio-diversity.

Load indices (amount of active ingredients weighted with acute or chronic toxicity to mammals, fish, daphnia, earthworms or birds etc.) was developed in order to track changes in pesticide properties and/or consumption as a result of the re-evaluation. Due to lack of data it was not possible to establish load indices for acute toxicity to algae and earthworms and chronic toxicity to birds and daphnia.

Evaluations of the policies/plans and goals/targets

Evaluation has been an integrated part of all Danish pesticide plans.

The first pesticide action plan (1986-1996) was evaluated in 1997. The main findings were as follows:

The Action Plan's goal of tightening up the registration system has been attained. The Danish EPA has reassessed 209 active ingredients, of which 29 were prohibited or are severely restricted, 29 active ingredients were rejected due to insufficiencies of documentation, 16 withdrawn by the applicant whereas there were no application for reassessment for 60 active ingredients. In 1993 the prohibited substances accounted for 25% of the total quantity of active ingredients intended for agricultural purposes. Over 80% of this quantity are regulated because these substances constitute a threat to groundwater. There is therefore reason to believe that the load on groundwater will drop in the future.

Sales of active ingredients have been reduced by about 40% in relation to the reference period 1981-1985. Part of this reduction can be attributed to the fact that the amount of arable land in crop rotation has been reduced by about 11%, while another part can be ascribed to the increasing use of low-dose products. The treatment frequency in the agricultural sector has not dropped as presupposed in the Action Plan. The total treatment frequency remains largely unchanged in relation to the reference period.

Load indices, show a clear fall with respect to acute and chronic toxicity for mammals. The load indices for acute toxicity for birds and crustaceans have also dropped, whereas the values for fish remain unchanged. Sales of pesticides suspected of possessing carcinogenic properties also remain at the same level as in the reference period.

Pesticide action plan 2000 – 2002 was evaluated in 2003, the main findings were:

The treatment frequency, had been reduced to 2.04 in 2000, and was thus close to the goal of 2.0.

8 000 ha unsprayed bufferzones along rivers, streams and lakes had been established and 183 264 ha (equivalent to approximately 8% of the area in rotation) are under organic cultivation.

It was assessed that demonstration farms, information groups, reduction plans on farm level has helped farmers to reduce the consumption of pesticides as farmers involved in these activities had a treatment frequency 3-10% below the average.

A survey made in 2002 on phase out of pesticides on public areas showed that local and regional authorities have reduced their pesticide consumption by more than 80 % since 1995, whereas state authorities have reduced their consumption by 73 % in the same period. The experiences so far show that non-chemical methods are more expensive/labour intensive than chemical methods and that it is difficult to control giant hogweed and weeds on rail tracks without pesticides.

Economic analyses

In 1997 the Danish Parliament unanimously adopted a resolution in which the Parliament requests the Government to appoint a committee with independent expertise to assess the overall consequences of phasing out the use of pesticides in the agricultural industry. The assessment must clarify the consequences for manufacturing, the economy, legislation, health, employment and the environment. The (Bichel)-committee analysed 4 scenarios including optimised use, limited use (80% reduction), no use of pesticides and conversion to organic farming.

The committee, which represented all relevant stakeholders, concluded unanimously that the Treatment Frequency could be reduced 30-40 % over a 5 to 10 year period, by implementing existing knowledge and techniques on pesticide use reduction, without significant cost to growers and socio-economic consequences. The committee's analyses and conclusion has been the foundation of the two latest pesticide plans.

The committee's work with economic analyses was finalised in 18 months and the cost was equivalent to 1.75 million EUR.

2. Modifications, new policies, strategies, goals or targets introduced since the first survey in 1994/5

New policies, strategies, goals or targets

Two pesticide plans have been launched since 1994/95, the latest in 2003. The core elements are still a strict registration system and use reduction, but new elements have been added.

Registration/protection of groundwater:

As extra safeguarding of the approval scheme, an early warning system (field tests of leaching potentials of registered pesticides in 5-6 locations) is established. So far, results from the Warning System

confirm that the approval scheme works. Of the 24 substances examined so far, only two substances have been proved to run off to near-surface groundwater, including drain water above the limit value.

Further safeguarding of the groundwater can be achieved by identifying areas most at risk of being polluted, so that the Government can establish cultivation agreements with farmers in order to minimise the risk of groundwater contamination. The first step has been to prepare the scientific basis for identifying such areas. A project has shown that it is probably possible to identify those areas of sandy soil, which are most sensitive to leaching of pesticides. It is under consideration to further develop the project into also including clay soil.

Rules regarding filling and cleaning of sprayers will be prepared in 2005, in order to reduce spillage and thereby reducing contamination of groundwater, surface water and soil.

Use reduction:

The 2 first pesticide plans concentrated on agriculture, whereas all pesticide policies are gathered in Pesticide Plan 2004 – 2009. The new plan does thus include policies regarding pesticides in agriculture, horticulture, on public areas and in private gardens.

Agriculture

The reduction goal for agriculture is a treatment frequency of 1.7 by the end of 2009. The goal shall be reached by targeted extension at farm level, so that existing knowledge is disseminated to farmers

The national reduction goal has been broken down to reduction goals for all major crops (e.g. goals for treatment frequency for herbicides, fungicides and insecticides in winter wheat), which has made the goals tangible for farmers and provide a useful tool in extension regarding use reduction on farm level.

Horticulture and fruit growing

A comprehensive analysis of the potential for reducing the impact from pesticides in horticulture and fruit growing has been carried out (the Kirsten Jensen Committee). The analysis shows that the use of pesticides is relatively high in horticulture and fruit growing. At the same time, products from these industries are often used as food. A reduction in the use of pesticides will therefore mean a reduction in the impact on the environment as well as in the content of pesticide residues in food. The analysis also shows that, unlike agricultural production, it is not possible to set up specific reduction targets for horticulture and fruit growing. This is partly because of *inadequate statistics on use*, and partly because the crops are *high-value crops*, for which failed pest and weed control etc. may lead to substantial losses.

The Kirsten Jensen Committee recommended communication, extension, and supervision as central elements in a strategy to reduce the use of pesticides. Furthermore, the Committee recommended further research and development within prevention and control of pests, spraying techniques, weed control, and decision-support systems. This will ensure that priorities are set for efforts where the greatest possible reduction in the use and impact of pesticides can be achieved.

The targets for horticulture and fruit growing are:

- targeted communication and extension aiming at gardeners and fruit growers with a view to reducing the use and impact of pesticides.
- research and development of methods in connection with the use of pesticides in horticulture and fruit growing, so that pesticide residues in food and the exposure of the environment to pesticides are reduced.

- increased focus on concentrations of pesticide residues in food.

Phase out of pesticides on public areas:

The goal is to retain the public sector efforts to minimise the use of pesticides.

Private gardens:

The goals are to:

- initiate an information campaign aiming at private garden owners on correct use of pesticides and on possibilities to reduce or avoid use of pesticides
- strive to reach an agreement with industry on "ready-to-use" pesticides.

3. Major risk reduction achievements over the last 10 years

The major risk reduction achievement has been:

- the tightening of the registration system including a re-evaluation, which resulted in ban or severely restricted use of the most harmful pesticides, and
- a reduction of the treatment frequency.

It is estimated that the achievement has been facilitated by:

- *Public concerns* regarding pesticides,
- *Fixed goals and timeframes*, that has been helpful in measuring progress and keeping up the pressure to reduce risks,
- The *pesticide tax* has helped reducing pesticide consumption and has been helpful in creating means to research and finance activities related to pesticide plans,
- The Bichel-committees *economic analysis* showing that pesticide consumption can be reduced with little or no economic consequences to growers created a consensus on all levels, that pesticide (over)use must be reduced. Involvement of all stakeholders in the analysis was crucial for acceptance of the analyses premises and results,
- Translating the overall national reduction goals into *target related to crops* helped farmers realising if an effort to reduce the use of pesticide is needed on their part, and has been an important tool in extension,
- Focusing on *farm counselling* regarding reduction of the use of pesticides has helped farmers reducing the Treatment Frequency.

4. Least successful strategies which faced difficulties

A build in weakness in any pesticide registration system is that it does not safeguard against *violation of the conditions for use* of a given pesticide – conditions, which are a prerequisite for safe use. A strict registration system does thus not fulfil its purpose unless efficient measures to secure compliance are in place. It is, for obvious reasons, *difficult to estimate the degree of compliance* with pesticide regulation. There is however little doubt that violation of the conditions for use does occur and is an area that needs more attention.

Even though *extension* regarding pesticide use reduction focused on farm level has proven to be helpful in guiding farmers to use less pesticide, it has its limitations. Farmers may thus have other priorities than pesticide use reduction, even in cases where reduction can be achieved with little or no costs, and extension may not be the most cost efficient way to achieve the goal. The issue of *instruments to reach risk reduction goals* is thus an area that needs more attention.

Part B: The Next Ten Years

5. Future Work

Most important areas for future work and areas for international collaboration

Economic analyses of potential for pesticide use/risk reduction are an area where OECD could play an important role as facilitator of such analyses.

Instruments/measures to reach risk reduction goals is an area that needs more attention and where OECD likewise could have a role in facilitating analyses of cost-efficient instruments/measures.

Compliance with regulation is crucial for safe handling of pesticide and is an area where OECD could be helpful in identifying measures to improve the level of compliance.

Contact person:

GERMANY

Part A: Evaluation of Pesticide Risk Reduction Efforts since 1994/5

1. Introduction of the policy framework/context for pesticide risk reduction efforts

2. Modifications, new policies, strategies, goals or targets introduced since the first survey in 1994/5

The questions are answered together:

Since 1995 major changes of the policy framework and the legal background of risk reduction in plant protection and especially in the use of plant protection products led to a new situation in Germany. This was the reason, why no regular evaluations of the overall plant protection policy were conducted.

The most important change was the revision of the Plant Protection Act (BGBl I, p. 971, 1527, 3512, 1998) in 1998 concentrating on:

- the implementation of the EU-Directive 91/414/EEG on the placing of plant protection products on the market. This led for instance to,
 - application of Annexes II, III and VI of the directive for all authorised plant protection products,
 - an authorisation of plant protection products only for *defined uses* and with specific use restrictions;
 - new possibilities for *minor use* authorisations.
- Additionally,
 - specific provisions on the use of plant protection products in *home and allotment gardens* were implemented;
 - the Ministry of Consumer Protection, Food and Agriculture was asked by the Plant Protection Act to publish *general principles for good plant protection*.

These principles of good plant protection practice were published 1998 (Bundesanzeiger 220 a, 1998) and are now under revision.

The Act for the reorganization of consumer protection in Germany (BGBl I, p. 3082, 2002) led to the establishment of the Bundesamt für Verbraucherschutz und Lebensmittelsicherheit (BVL) [Federal Office of Consumer Protection and Food Safety] and Bundesinstitut für Risikobewertung (BfR) [Federal Institute of Risk Assessment] on November 1, 2002.

The aim of this act was to separate risk-assessment and risk-management. BVL became the risk-management-agency. Risk-assessment is done by BfR (human and animal health), Federal Office of environment (environment) and Federal Biological Research Center for Agriculture and Forestry (efficacy, benefits).

New legal provisions for the regular *check of plant protection equipment* as well as new restrictions for non agricultural uses of certain Herbicides were implemented in 2002 and 2003.

The Federal Ministry for Consumer Protection, Food and Agriculture held a workshop 'Guidelines on Future Crop Protection Politics' in Spring 2002. It was broadly invited and attended by many relevant groups, representing NGO's from the consumer protection, environment, nature conservation and agriculture area. In the same year the coalition agreement between the government parties on the formation of the Federal Government agreed to develop a reduction strategy for plant protection products through improved application, procedures and technical equipment and as a result of good plant protection practice.

In spring 2003, another workshop 'Guidelines on Crop Protection Politics – Reduction, Communication and Transparency' was held. It presented first ideas of tools to reduce plant protection product risks and application.

As a result of the broad discussion about further reduction of risks and use of plant protection products in Germany a “*reduction programme for chemical plant protection products*” is now in preparation.

The following *goals* were discussed:

- Reduction of plant protection product risk and use based on the application index,
 - considerable reduction of plant protection product use exceeding the needed minimum,
 - replacement of a considerable portion of chemical pest management by preventive and non-chemical pest management,
 - development and implementation of hot-spot management programmes.
- Reduction of cases exceeding maximum residue limits in agricultural products to less than 1% in any product group (national production as well as imports).
- Extension and improvement of expert knowledge with all professional users and suppliers of plant protection products.
- Documentation of the uses of plant protection products.
- Improvement of extension/advisory services.

The programme will include a set of different approaches to reduce the use of plant protection products as well as risks which may occur from their use. The intention is to implement it in 2005 as a long term programme.

Success of the “*reduction programme for chemical plant protection*” will be evaluated with the following *indicators*:

1. Application index¹ to evaluate the intensity of chemical plant protection product use on farm and regional level. The calculation on regional level is based on data obtained from the sampling surveys under NEPTUN (Network to Survey Actual Plant Protection Product Usage in Different Natural Areas of Germany). NEPTUN was applied first in 2000 to arable farming, in 2001 to fruit and hop growing and in 2002 to grape growing in Germany.

¹ Number of applied plant protection products in a crop related to the treatment area and the registered application dose.

2. Excess of maximum residue limits on the basis of a representative plant protection product residue monitoring. The indicator is covered by two programmes: food surveillance and food monitoring. Under food surveillance the responsible federal Länder authorities check whether food or feeding stuff met the maximum residue limits for active ingredients and other contaminants. The BVL analyses the reports and generates a national report. The report is also passed on the EC.

Food monitoring is an additional joint programme of the federal government and federal Länder based on systematic measurements and observations. Food throughout the Federal Republic of Germany is representatively sampled. Annual monitoring is based on a schedule fixed by the federal government and federal Länder. It contains a detailed list of the food and substances to be checked.

3. Environmental risk indicator, calculated on the basis of the SYNOPSIS assessment model (synoptic plant protection product assessment model). The current version assesses the risk potential posed by plant protection product use to terrestrial and aquatic organisms.

It has regularly been applied on the years 1987, 1994, 1998, 2000, 2002 (partly as retrospective). Data are obtained from a comprehensive estimation of crop-specific plant protection product application based on the annual sales data collected according to article 19 of the Plant Protection Act (active ingredient related and since 1998 also product-related). In future the model will use data also from the NEPTUN project.

The new legal provisions on plant protection in Germany and new EU provisions (Directive 91/414/EWG) were tightened and further provisions for the application with respect to the protection of water bodies and edge structures were implemented. They include the use of *application equipment* with reduced losses (50%, 75%, 90% and 99% less spray drift) published in a register in the official gazette (Bundesanzeiger) and take into account the recovery potentials of certain cultural landscapes with the percentage of close-to-nature biotopes estimated through GIS-technology also published and regularly updated as official list in the official gazette.

The plant protection services of the federal Länder inspect marketing and application of plant protection products. They inspect shops and farm enterprises as routine measure (bottleneck-inspections) and in case of suspected irregularities. Inspection efficiency will in the future be increased by a nationwide '*Plant protection product Inspection Programme*' tested for the first time in 2004 and co-ordinated by the federal government and federal Länder. It will come into force in 2005.

3. Major risk reduction achievements over the last 10 years

Regulation and enforcement

The legal provisions with respect to authorisation and application of plant protection products, the education of the farmers and the plant protection equipment largely contribute to risk reduction. This led for instance to less groundwater pollution and less surface water pollution with plant protection products. The '*Principles of Good Plant Protection Practice*' represent an important basic document in this respect as handling tool for farmers and the extension service.

Application equipment

The overall technical standard of the plant protection equipment in Germany is high. The reason is the mandatory technical check every two years. Additionally many users voluntarily use injector nozzles and other spray drift reducing nozzles.

Food monitoring

Residue monitoring is carried out on various foods using multi-residue test methods. The results are published regularly.

Groundwater monitoring

A nation-wide overview of groundwater contamination with plant protection product was given in 1997. The 'Report on Groundwater Condition – Plant protection products' generated by the federal Länder water workgroup (LAWA) showed, that most detections refer to atrazine, its degradate desethyl atrazine and simazine despite many years' use restrictions and prohibitions on atrazine and simazine. The use of Atrazine was banned in 1991.

Voluntary programmes

Approximately 80% of all fruit growers in Germany are growing their fruit according to a national guideline on controlled integrated production. This guideline has been developed by the German fruit growers association and is certified by a label.

The participation in agri-environmental programmes, which include organic farming or other ways to reduce the use of plant protection products and risk associated with the use of them, is more and more common.

A second possibility is the use of certain quality management systems, which include parameters concerning plant protection and the reduction of uses and risks. There are already different management systems on the market in Germany like KUL (Criteria of Environmentally Compatible Farming), REPRO or USL (Environmental Standard Agriculture) or other management systems like EMAS. It is planned to subsidise the use of such systems.

Other voluntary tools could be EUREP-GAP or national quality assurance programs (QS-Standards).

Subsidies

A large number of farm enterprises participate in agri-environmental programmes of the federal Länder co-financed by the European Commission.

Extension/advisory service, education/training of farmers

Information and communication, in particular, official extension services play an important role in risk reduction.

In the past years, good plant protection practice and risk reduction on plant protection product application became priority subjects in farmers' trainings. Participation in these training meeting differ from crop to crop and from region to region.

In 1997, the federal Länder established the Zentralstelle der Bundesländer für computergestützte Entscheidungshilfen im Pflanzenschutz und Pflanzenbau (ZEPP) [Central Office of the Federal Länder for Computer-Supported Decision Aids in Pest Management and Plant Production] on the basis of an administration agreement. ZEPP gathers and maintains existing *forecast and simulation models for important agricultural and horticultural pests*, checks them and prepares them for practical use. ZEPP directs the forecast information to the plant protection services of the federal Länder, who inform the farmers by fax, infomail or telephone. Most sophisticated information technology, communication and 400

weather stations allow to make infestation and infection forecasts on pests and fungal diseases all over Germany. The forecast is provided daily and for the entire region.

Further ZEPP initiates the development of forecast models for further pests. A universal procedure helps to use scientific model approaches within shortest time, to adapt them to regional conditions and prepare them for practical use. Implementation is carried out in close co-operation with research centres the Federal Biological Research Centre for Agriculture and Forestry, universities and others. It has manifold co-operations with centres in other European countries.

Demonstration farms

Some demonstration farms were established as model projects of federal Länder (for instance based on EU funding programmes). It is intended to increase the network of model farms as part of the “Reduction programme for chemical plant protection”. Together with extended advisory activities and the participation of farmers in quality management systems such a network is expected to largely contribute to risk reduction.

Research and Development

Research related to the reduction or risks associated with the use of plant protection products is broadly funded by various organisations, ministries and by the federal Länder in Germany.

The overall research programme of the Federal Biological Research Center for Agriculture and Forestry, which is financed by the Federal Ministry of Consumer Protection, Food and Agriculture, has been revised in 2003. Biological, technical and other sustainable concepts for plant protection strategies, plant protection strategies for organic farming as well as instruments reducing the use of chemical plant protection products became important highlights of their research programme.

4. Least successful strategies which faced difficulties

Too many regulations: Farmers need clear advice on how a plant protection product has to be applied. If the farmers lose the overview about all the different regulations, risk reduction may become problematic.

Excessively long labels: Labels that are too long and diverse may lead to situations where farmers do not read the labels or do not realise important changes.

Voluntary programmes: Voluntary programmes are only successful if the self-obligations of the users are economically feasible.

Extension services: The number of staff members of the extension services of the federal Länder in Germany decreases dramatically. PC software and internet portals help to rationalize provision of information and advisory services and to make them more efficient, but they cannot compensate for the reduction in staff.

The transition from research to practical use: Research programmes on new pest management strategies often end with a final report and are not implemented or practiced on farms. We need to put more emphasis on the transfer of new knowledge especially related to risk reduction to practice.

Part B: The Next Ten Years

5. Future Work

On a national basis there are many areas for future work, which are important for risk reduction. In the context of this questionnaire, only those areas which seem to be important for OECD are mentioned.

Requirements on good plant protection practice and integrated pest management

International codes on good plant protection practice or integrated pest management are not available. For this reason it is often difficult to understand the general background for a discussion within the OECD context.

For this reason, it would be interesting to conduct a survey on such codes or guidelines on good agricultural practice and as a more sophisticated concept on integrated pest management in the OECD member states, and to develop, in a second step, basic elements for such codes and guidelines as a guide for those members who are working on this.

National Risk Reduction Programmes

National Risk Reduction Programmes should include all the basic strategies, which lead to sufficient risk reduction. It may be very useful to conduct an OECD-wide survey on existing national risk reduction programmes and to analyse, which are the most effective strategies in the different member states.

Especially the use and the results of risk reduction indicators (risk-trends) should be documented over time (e.g. every three years).

Compliance

Compliance with national regulations is one of the most important tools for risk reduction.

To get better acceptance and more harmonisation, it is important to develop OECD-wide accepted key criteria for national compliance programmes.

Hot spot management

Very often plant protection problems do not occur nationwide but in certain areas or certain crops. A risk analysis based on underlying data and GIS-information can help to identify these hot spots and to help governments and/or extension services to react in an appropriate way.

Inclusion of retailers and food processors and international consumer protection associations in OECD-discussions

Very often growers have to fulfil requirements of retailers or food processors, which are not illegal but lead to the application of more or other plant protection products, for instance because of higher quality requirements. Sometimes for this reason the use of biological plant protection products is not possible for the grower. Retailer, food processor and international consumer protection associations should become invited to the OECD meetings too.

Part C: Optional

6. Miscellaneous/specific questions some countries/organisations wanted to ask other countries in the questionnaire

Is aerial spraying authorised?

Yes. Spraying is carried out to spatial crops (viticulture) and in forestry. Spraying has to meet the relevant provisions of the federal Länder.

How are the problems of private/amateur use being addressed?

In Germany, plant protection products may be used in home and allotment gardens when they are registered by the Bundesamt für Verbraucherschutz und Lebensmittelsicherheit (BVL) [Federal Office for Consumer Protection] and listed in the Plant protection product Register part 7 for home and allotment gardens (last edition 2004). The BVL carries out a special examination with specific requirements for these uses (classification according to Gefahrstoffverordnung (Regulation on Hazardous Substances), type and size of packaging, dosing etc.). Plant protection products are only allowed for use home and allotment gardens, if they are labelled with the term “use in house- and allotment gardens allowed”.

Home and allotment garden include not only outside areas in a garden and plants on terraces and balconies, but also rooms with plants (rooms, offices).

Informing about changes to authorization

Information provision uses several ways:

- Authorisations and all the changes and modifications have to be documented in the official gazette (Bundesanzeiger). Additionally an internet database of the BVL is available, which gives all the actual information on authorised plant protection products.
- Changes in legislation are published in all relevant media.
- training and information through the extension service of the federal Länder.

Is the use of “low-risk plant protection products” permitted without authorisation?

No.

Is tank-mix application authorised?

Yes.

Are pre- and post-treatment activities (i.e. mixing, cleaning) specifically addressed and how?

Yes, they are of special importance. They are pointed out in the principles of good agricultural practice.

What are the systems in place for gathering information on plant protection product poisoning incidents?

In the event of acute plant protection product poisonings the physician turns to the official information and care centre for poisonings in the relevant federal state within 24 hours.

Plant protection product poisonings have been recorded and analysed over many years.

Under the Chemicals Act, every physician is obliged to report poisonings or suspected poisonings due to certain substances to the Central Authorisation Office for Poisonings, Hazardous Substances and Preparations at the Bundesinstitut für Risikobewertung (BfR) [Federal Institute for Risk Assessment]. In addition, poison information centres pass on data to the Central Authorisation Office. It analyses the notifications and generates annual reports.

Domestic and wild animal poisonings

Plant protection products may pose a risk to domestic and wild animals especially when misused.

Even intentional plant protection product poisonings are reported some times. These cases are subject to the responsible local authorities. The Bundesamt für Verbraucherschutz und Lebensmittelsicherheit (BVL) [Federal Office for Consumer Protection and Food Safety] collects notifications on plant protection product poisonings of vertebrates and analyses them.

Bee poisonings

Bees are under special protection because they are important for pollination of many cultural and wild plants. It is laid down by law to investigate bees and plants in case of suspected plant protection product poisoning. The responsible central authority was established at the Biologische Bundesanstalt für Land- und Forstwirtschaft (BBA) [Federal Biological Research Centre].

Notifications of plant protection product poisonings in invertebrates (1998-2003)

Plant protection products may pose a risk to domestic and wild animals especially when misused. Abuse has been reported, too. Poisonings are subject to the plant health services of the federal Länder. Deliberate poisoning is subject to the responsible prosecutor. The Bundesamt für Verbraucherschutz und Lebensmittelsicherheit (BVL) [Federal Office for Consumer Protection and Food Safety] collects relevant information and analyses them.

What are the systems in place for gathering information on plant protection product impacts on vulnerable groups? (e. g. foetuses, infant, children)

Responsible agencies in Germany are BVL [Federal Office for Consumer Protection and Food Safety] and BfR [Federal Institute for Risk Assessment]. General systems for gathering information on plant protection product impacts on vulnerable groups are not in place. It's done on a case by case basis.

Contact Person:

Dr. Wolfgang Zornbach
Federal Ministry of Consumer Protection, Food and Agriculture
Referat 518 (Plant Protection)
PO Box 14 02 70, D-53107 Bonn
Rochusstraße 1, D-53123 Bonn
TEL; +49 (0)1888 529 - 4317
FAX: +49 (0)1888 529 - 553595
poststelle@bmvel.bund.de
www.verbraucherministerium.de

HUNGARY

Part A: Evaluation of Pesticide Risk Reduction Efforts since 1994/5

1. Introduction of the policy framework/context for pesticide risk reduction

No special programme for risk reduction has been worked out. The action on this issue has been implemented in the frame of several individual national programmes, i.e.: National Environmental Protection Programme, National Environmental Health Action Programme, National Agri-Environmental Programme and National Rural Development Plan.

National Environmental Protection Programme: operated in compliance with Act and Government decisions, Period I: 1997-2002, Period II: 2002-2008. Complex programme for environment protection.

National Environmental Health Action Programme: closely related to the National Environmental Protection Programme. With the participation of state, local government and non-governmental organisations, in compliance with Government decisions, it operates in 10 working groups mostly in the field of human health concern (drinking water, surface water, waste water, food safety).

National Agri-Environmental Programme: operated in compliance with Government decision, for the implementation of objectives of agricultural developments, environmental protection and nature conservation.

National Rural Development Plan: Government programme for the implementation of rural developments, incl. environmental protection, with priority for related agricultural management programmes.

Risk reduction on plant protection products (PPP) is related to the above programmes in the following fields:

Legislation: has been the most intensive activity of the last 10 years: full revision of earlier legislation. It means that the Community safety requirements for the authorisation of active substances and PPPs have been met. The provisions have been complemented with earlier measures on the safe use of PPPs with reduced risk. Such national provisions are as follows:

- a) *Marketing categories of PPPs*, requiring special education, training for the purchase, trade and use of PPPs placed on the market (university diploma, 80 hours training), and regular training of distributors and users (every 5 years). “*Doctor of Plant Medicine*” system has been established, and introduced in the practice. (Doctors of plant medicine “prescribe” the plant protection products required.)
- b) Provisions for the *Qualification and of the sprayers* prior to their placing on the market and their temporary control.
- c) Legal provision, collection and processing of *statistical data* on PPPs, as “Risk indicator” aiming at the improving of former national statistical system.

- d) Annual control programmes (maintenance and/or introduction):
- residue test with plant products
 - testing PPP contamination of surface and ground waters
 - regular test of soil (POP substances)
- e) Working out and implementation of legal conditions for PPP wastes (mostly contaminated packages).
- f) Establishing new technical tools for information flow, exchange (data-bases, web sites).
- h) Strengthening, co-operation of international relations. Hungary joined to several international agreements (Rotterdam Convention, Stockholm Convention, Aarhus-POP Protocol). We have joined to the programme of EPER and to the system of UN-ECE PRTR. We operate a Regional Forum (CEUREG) for the competent authorities responsible for the authorisation of PPPs.

Indicators: indicators for risk reduction have not been worked out, no exact methods are used for evaluating the obtained results. This will be the task of the future. Development of an internationally uniform practice would be useful.

The following facts could be considered as indicators, or evaluation of results:

- a) Cca. 70 % decrease in the *use* of PPPs from the end of the 1980s (economical reason, no compliance with any implemented risk reduction program)
- b) An up-dated active substance *structure* was established with the withdrawal of several active substances
- c) Feed-back of test results obtained in *monitoring* (e.g. modification of pest management programmes, information, improved controls)
- d) Reduction of *wastes* of PPPs
- e) Increase of the areas included in integrated production and ecological farming

2. Modifications, new policies, strategies, goals or targets introduced since the first survey in 1994/5

With respect to the earlier practice, the following objectives and new strategies have been introduced:

- a) High priority was given to the implementation of *integrated pest management*. In addition to applying new techniques, the practice was included in the agricultural *support system*.
- b) Solution for the handling of PPP *wastes* (packages, POP substances).
- c) Drafting *food safety* tasks, establishment of institutional system (Food Safety Office).
- e) Extension of *monitoring* studies (special study of foods of certain age-groups, improvement of environmental monitoring).
- f) Establishment of a *new legal and institutional* system for the authorisation of PPPs harmonised at Community level, supporting the safer use of PPPs.
- g) Introduction of plant protection *quality assurance* schemes in farms.

3. Major risk reduction achievements over the last 10 years

Good results have been obtained in the following fields for the last 10 years:

- a) Establishment of new legal and institutional frame for PPP authorisation. Several new provisions have been entered into force and a new institutional structure has been shaped.

Reasons behind that: expressed desire of the Government, coordinated action and similar intention of various sectors, implementation of social expectations.

- b) Establishment of new system for container management, an efficient practice was introduced, high volume of contaminated packaging waste was collected.

Reasons behind that: legal provisions entered into force, financing provided, reliable work of responsible bodies.

- c) Extension of integrated pest management.

Reasons behind that: coordinated action from the various sectors, governmental support and incentive, respect of producers' interests (supports) because of demand from the society for healthy foods, requirements of environmental protection.

- d) Contribution to regional co-operation by operating a regional forum (CEUREG regional forum for 10 years).

Reasons behind that: governmental and institutional assistance, support by international organisations, search for mutual interests among countries.

- e) Continuous education, training of producers, traders, introduction of "Doctor of Plant Medicine" system.

4. Least successful strategies which faced difficulties

Less successful activities:

- a) Introduction of quality assurance system at farm level.

Reasons behind that: lack of support, financial background for supports has not been created. The interested parties do not support.

- b) Exchange of information (information, knowledge) with the producers is not satisfactory

IT development has only been partial. Conditions for continuous developments are missing.

- c) Introduction of the quality control system of sprayers

Reasons behind that: government attitude is uncertain, producers are not interested, missing financing for the operation of the supervisory (control) institution.

- d) Revision of active substances, improvement of structure

Reasons behind that: lack of institutional capacity, lack of international relations, international work sharing.

Part B: The Next Ten Years

5. Future Work

Priorities for the next years:

- a) Refining legal and institutional backgrounds of PPP authorisation, revision of PPPs, by meeting requirements for risk reduction
- b) Introduction of the producers' quality assurance system, use of labels (trademarks)

- c) Working out indicators, risk evaluation systems
- d) Extension of waste treatment programme, collection of obsolete pesticides
- e) Information exchange (focusing to special groups of society) increase of work sharing mainly at regional level
- f) Increase of monitoring studies, mostly to focus surface and ground waters

Part C: Optional

6. Miscellaneous/specific questions some countries/organisations wanted to ask other countries in the questionnaire

Is aerial spraying authorised?

Aerial spraying is authorised, specified in ministerial decrees.

How are the problems of private/amateur use being addressed?

Only certain PPPs (in market category III) can be used. Problems encountered: producers have no information, lack of necessary knowledge, no proper handling of wastes, and application disturbing the surrounding environment (neighbours).

How is the effectiveness of communication and information provision ensured?

Conventional media are used (publications, official and technical journals). Introduction of new IT equipments are necessary.

Is the use of “low-risk pesticides” permitted without registration?

No. All products used for plant protection purposes are subject to authorisation.

Is tank-mix application authorised?

Yes. A reference is made in the registration document of the PPPs (chapter: pest management recommendation). Other use is also spread. Clearer legislation is required.

Are pre- and post-treatment activities (i.e. mixing, cleaning) specifically addressed and how?

Ministerial decrees on the use of PPPs include general provisions (use of personal protective equipments, preparation, storage of spray, use of cleaning water, cleaning of equipments, etc.)

Contact Persons:

Central Service of Plant Protection and Soil Conservation
H-1118 Budapest
Budaörsi út 141-145., Hungary

Zoltán Ocskó
Phone: 36/1/3091040
Fax: 36/1/3091074
e-mail: ocsko.zoltan@ntks.ontsz.hu

Ágnes Pethő
36/1/309 1085
36/1/3091074
petho.agnes@ntks.ontsz.hu

IRELAND

Part A: Evaluation of Pesticide Risk Reduction Efforts since 1994/5

1. Introduction of the policy framework/context for pesticide risk reduction

Ireland did not participate in the previous survey. Data and indicators have not been used. Economic analyses have not been used.

2. Modifications, new policies, strategies, goals or targets introduced since the first survey in 1994/5

The last year has seen the introduction of a pesticide *usage survey*, which will play a pivotal role in the identification of possible misuse and over use scenarios and may well indicate where possible reductions can be made without to ensure that use is sustainable.

The next year (2005) will see the introduction of *new legislation that addresses the "use" phase* in a comprehensive manner. Measures being examined include operator training and certification, equipment registration and periodic calibration, record keeping and basic storage requirements.

This legislation will also introduce additional controls on wholesale/retail distributors. The measures under consideration include *training and certification* of extension workers and advisors, training and certification of store keepers, certification of stores and recording keeping etc.

Regarding the *non-agricultural sectors*, the Pesticide Control Service (competent authority for Biocides) is currently devising a register of Biocidal products available on the Irish market.

3. Major risk reduction achievements over the last 10 years

Regulation and enforcement

The Pesticide Control Service has an extensive pesticide residue monitoring programme in operation. Some fourteen hundred samples of food of plant and animal origin are analysed each year for pesticide residues. A very small percentage of samples exceed MRLs established.

Standardisation of application equipment and technical verifications

There is currently a voluntary scheme in operation operated by TEAGASC (State advisory and research body).

Voluntary programmes

There are several voluntary quality assurance schemes in operation. These include producers in the following sectors; horticulture, mushroom, potatoes and cereals.

Taxes, subsidies/incentives, and other economic instruments

There are no such incentives in place or planned.

Labelling

All labels on Plant Protection Products and Biocides are compliant with Council Directive 1999/45/EC. We have no information or feedback on how effective labelling is.

Other information/communication tools

The Pesticide Control Service makes its staff available for seminars, conferences, workshops and trade talks, etc.

Education/training

The Pesticide Control Service (PCS) makes its staff available for seminars, conferences, workshops and trade talks, etc. Staff at PCS are also involved with 3rd level institutions and provide lectures to students involved in pertinent degree courses.

Extension/advisory service

The state advisory service (TEAGASC) engages professional staff for its various advice giving programmes. Proposed legislation may contain a requirement that people wishing to give advice and disseminate information on Plant Protection Products hold a life science degree as a basic standard as well as appropriate crop production modules.

Demonstration farms

There are a number of demonstration farms in the country; these include farms owned by the Department of Agriculture, TEAGASC, the universities etc.

Research and development

There are research and development programmes in place in TEAGASC and the universities. The PCS has an involvement in some of these programmes.

Stakeholder involvement

Stakeholders are consulted when a change to legislation is proposed or when additional legislation is being developed. This is done via stakeholder meetings, formal and informal consultation.

4. Least successful strategies which faced difficulties

It is difficult to comment at this early stage.

Part B: The Next Ten Years

5. Future Work

National agenda

The proposed measures detailed in 2 and 3 above are quite comprehensive. In the unlikely event that further gaps in the regulatory system are identified, the need for additional controls will be considered.

Areas for international collaboration

- a) *Work-sharing in review* of active substances
- b) *Harmonized standards for training and certification/licensing* of operators / applicators
- c) *Harmonized sprayer registration* and calibration systems.
- d) *Facilitating collection of data and assembly of data bases and GIS maps* to a common standard at national and regional level to facilitate estimation of risk for non-target species and to facilitate monitoring of on-going trends.

Part C: Optional

6. Miscellaneous/specific questions some countries/organisations wanted to ask other countries in the questionnaire

Is aerial spraying authorised?

No. Under exceptional circumstances particular operations can be licensed.

How are the problems of private/amateur use being addressed?

We are not encountering problems of this nature.

How is the effectiveness of communication and information provision ensured?

Effectiveness could and will be improved – more detailed information is to be included on our web site <http://www.pcs.agriculture.gov.ie>.

Is the use of “low-risk pesticides” permitted without registration?

No.

Is tank-mix application authorised?

Yes subject to provision of relevant and assessment of compatibility and where relevant efficacy.

Are pre- and post-treatment activities (i.e. mixing, cleaning) specifically addressed and how?

There are no pre treatment activities. Regarding post treatment activities, PCS is responsible for the national pesticide residue monitoring and violation investigation programmes (on behalf of the Food Safety Authority of Ireland). Responsibility for monitoring water quality rests with the Environmental Protection Agency while responsibility for ensuring worker safety is vested in the Health and Safety Authority.

Contact Person:

JAPAN

Part A: Evaluation of Pesticide Risk Reduction Efforts since 1994/5

1. Introduction of the policy framework/context for pesticide risk reduction

In Japan, pesticide registration system is established under Agricultural Chemicals regulation Law (hereinafter referred to “the law”), and it is stipulated in the law that any person shall not manufacture, process, import, sell and use any pesticide without its registration granted by the Minister of Agriculture, Forestry and Fisheries (Minister of AFF).

In order to prevent the pollution by the use of pesticides in Japan, the law requires that all pesticide must be registered through a process which includes evaluation of the persistence, toxicity, and other characteristics of the pesticides. The Minister of the Environment establishes the withholding standards for the registration in the following categories: a) crop residue; b) persistence in soil; c) adverse effect to aquatic organisms; and d) water pollution. As of September 2004, the standards for the water pollution have been established for 133 active ingredients used for paddy fields and the standards for crop pollution caused by pesticide residue have been also established for 377 active ingredients.

Furthermore, even after granting registration, in order to protect health and environment from adverse effects, several preventive measures (e.g. designation of agricultural chemical water pollution) are taken and on-site inspection of manufacturers, distributors/retailers and users is conducted.

2. Modifications, new policies, strategies, goals or targets introduced since the first survey in 1994/5

Promoting Measures through Revised Agricultural Chemicals Regulation Law

In order to prohibit the import/sale of unregistered pesticides, the law was revised in 2003, in which some measures (e.g. prohibition of manufacture, import/sale and use of unregistered pesticides, the designation of specific plant protection substances, exempted from the registration, mandatory standards of usage for users of pesticides and increase of penalty fee) were added.

Mandatory Standards for Users of Agricultural chemicals

In order to ensure the safe and appropriate use of pesticides, the law establishes mandatory standards. For example, when users apply pesticides to food crops, they shall use those pesticides in accordance with the description in the label of the registered pesticides (e.g. the target crops, PHI, and the application frequency, etc.)

Specific Plant Protection Substances

Pesticides whose materials are obviously safe to men, livestock and aquatic organisms etc. are exempted from the registration. Such pesticides are defined as Specific Plant Protection Substances (SPPS) in the law. At present, baking soda and table vinegar having fungicidal properties and locally existing natural enemies are designated by Ministers of AFF and the Environment. The additional designation of SPPS is being considered.

Enhancing Registration Withholding Standards for damage to protect aquatic ecosystem

In 2003, the Ministry of the Environment (MOE) revised withholding standards for the damage to aquatic animals and plants considering the current social needs of preservation of the ecosystem and circumstances around the ecological effect to be caused by pesticides (going into effect in 2005). The new standard is based on the risk assessment procedures of comparing the predicted environmental concentration (PEC) of a pesticide in a river according to the proposed usages, with its acute toxicity to algae, crustacean and fish. With the introduction of this new system, it is expected that the Japanese risk management of pesticides will be improved for preserving the aquatic ecosystem. (The previous standard was established uniformly to all active ingredients and it was established based on the toxicity to carp only.)

Establishment of Guidelines for safety Evaluation of Air pollution Caused by Pesticide

The aerial application of pesticides is carried out widely in Japan and it is sometimes reported that the applied pesticides are detected in the air near residential areas after the application. For this reason, the MOE collected relevant data such as the concentration of pesticides in the air during aerial application, and the health effect caused by pesticide inhalation. In 1997, the MOE established the evaluate guidelines of the concentration of pesticides in the air for main ten pesticides used in aerial application.

Distribution of the information of pesticides through website

The Ministry of Agriculture, Forestry and Fisheries (MAFF) and Agricultural Chemicals Inspection Station (ACIS) revised each homepage to put pesticide database and the latest information etc. to make them available to the public. It is expected to prevent adverse effect to human health and environment by misuse of pesticides.

Establishment of basic policy on Principles of the Environmental Policy in Agriculture, Forestry and Fisheries

The basic policy, established in 2003, clarifies the policy of the change for the agriculture, forestry, and fisheries that is based on a farmer's own effort and places a high value on environmental protection. In this policy, it was announced that Integrated Pest Management (IPM) should be facilitated for the purpose of reducing the environmental burden by the use of pesticides.

3. Major risk reduction achievements over the last 10 years***Cost-effective policy tools or activities***

There are only a few cases that pesticide residues exceed the withholding standards or monitoring levels in recent years. These successes come from following measures:

(1) Enhancement of *regulation with regard to illegal use* of pesticides (e.g. use of unregistered pesticides, application to non-approved crops)

(2) Additional facilitation of proper use of pesticides by the enhancement of *penalty on pesticide use that are non-compliant* with mandatory standard for users of pesticide and other rules (pesticide use record, the attention to the pesticide use around residential area etc.).

(3) To review the *withholding standards*, the MOE carries out to monitor pesticide residues in the crops, soils, and/or paddy water, after the pesticides are used in accordance with the registered usages. And usages are changed by the MAFF, when it is found that those usages cause to the situation which does not comply with the standards.

(4) *Pesticide concentration in public water and at drainage* of golf courses is monitored and data are published.

(5) The quick dissemination of the latest version of pesticide *information through website* to prevent misuse and misunderstanding on registered pesticides.

Stakeholder involvement

MAFF annually conducts as one of the measures for the pesticide risk reduction, the campaign for the prevention of suffering from pesticides with prefectural governments, pesticide manufacturers and distributors, etc. Manufacturers also voluntarily continue the efforts to develop or modify the technique of pesticide application and formulation of pesticide products to ensure safety.

Part B: The Next Ten Years

5. Future Work

To continue the efforts for the pesticides risk reduction activity, it is necessary to enhance the *withholding standards*, taking following elements into consideration:

- The ecological risk assessment and risk management for terrestrial organisms
- The risk assessment and management for by-standers (in light of spray drifts of pesticides to non-agricultural area (e.g. park, residential area)).

Part C: Optional

6. Miscellaneous/specific questions some countries/organisations wanted to ask other countries in the questionnaire

Is aerial spraying authorised?

When conducting aerial spray in Japan, pesticide user must use the pesticides registered for aerial spray. The license system for aerial spray has not been adopted in Japan. If the user sprays pesticides with manned helicopter, he/she is required to submit the plan for the use of pesticides on annual basis to Minister of AFF.

In addition, it is obligated in the ministerial ordinance that the pesticide user pays attention to avoid drift out of the target area.

How are the problems of private/amateur use being addressed?

There is no difference in regulation between professional and private/amateur pesticide users under the law, so the both users must comply with mandatory standards for users of pesticides when they use pesticides.

However, since private/amateur users have less experience/acknowledgement on pesticide use than professional users, the guidance on pesticide use has been established and distributed through local governments' or retailers' publicity materials.

How is the effectiveness of communication and information provision ensured?

The information on the proper use of pesticides has been distributed through prefectural government and agricultural cooperative through the campaign for the prevention of suffering from pesticides. The MAFF has also been providing pesticide information and responding to the public question on pesticide through website, and conducting risk communication for correct understanding to pesticides.

Is the use of “low-risk pesticides” permitted without registration?

It is defined in the law that a pesticide, whose materials are harmless to human, livestock and aquatic organisms, etc., and has effect on pest and plant disease, is designated as SPPS under the given procedure by the MAFF and MOE. SPPS can be used as plant protection products without the registration by Minister of AFF. But the following cases are not included; chemically synthesized substances (except food relative products), antibiotics, micro-organism as counter-pest (except weakened viruses) and chemosynthesis detergents. At present, baking soda and table vinegar having fungicidal properties and the locally existing natural enemies were designated as SPPS by the Minister of AFF and the Environment.

Is tank-mix application authorized?

On-site tank-mixing is not recommended by the government in Japan in the view of safety for human health and the environment. But the user use the mixed pesticide liquid for the work efficiency under his own responsibility, so the government provides the instruction in which the user should pay full attention to the tank-mix application taking account of available information.

Are pre-and post-treatment activities (i.e. mixing, cleaning) specifically addressed and how?

The information on the adjustment of the dilution etc. of pesticides before treating pesticides and the precaution for washing the mixing tank is provided to the user by relevant ministries, agricultural cooperative and pesticide manufacturer, etc. through the campaign for the prevention of suffering from pesticides, etc.

What are the systems in place for gathering information on pesticide poisoning incidents?

The information on accidents (e.g. poisonings) has been annually collected through prefectural government by the MAFF and the Ministry of Health, Labor and Welfare.

What are the systems in place for gathering information on pesticide impacts on vulnerable groups?

In consideration of children's vulnerability to chemical substances containing pesticides, related papers are collected and research is carried out to investigate children's behavioral pattern for risk assessment by the MOE.

Contact Person:

KOREA

Part A: Evaluation of Pesticide Risk Reduction Efforts since 1994/5

1. Introduction of the policy framework/context for pesticide risk reduction

Pesticide management act (PMA) have been revised and re-enforced several times since it was promulgated in 1957 for the first time in the Republic. Pesticides had been registered by Ministry of Agriculture and Forestry (MAF) till November 1996 under the legislation system of pesticide commodity permission and commodity notification. Upon adopting the notification system of pesticide formulations, everybody was able to register the notified pesticides by submitting the formulation recipe and supplying a certificate of the technical grade of active substances (TGAI). Thus, the Republic became a centre of generic pesticides all over the world because pesticide formulators intensively imported the low-priced TGAI with less confidence of the quality. In consequent, the Government entirely revised the PMA with *a full registration scheme*, and since December 1996 pesticide registration is granted by the Administrator of Rural Development Administration (RDA) which has an activity on research and extension services involving various disciplines of agriculture as well as expert resources related with crop protection. Henceforth, there has been several enforcement of PMA to reduce pesticide risks including special reviews of distrustful pesticides for dietary safety (food residues) or negative environmental impacts on non-targeted organisms, the introduction of re-registration every ten years, a separate registration scheme for bio-pesticides, etc.

Survey on pesticide use pattern is being performed every four years; rice, orchard fruits, leafy vegetables and fruit vegetables. Annual input of pesticide on arable paddy rice was surveyed in 1999 and 2003. Korea Crop Protection Association (KCPA) publishes pesticide year book which contains extensive information; a list of registered pesticides, imported and exported amounts, produced and consumed amounts at factory gate, etc. The survey on rice over the last two cycles revealed that the KCPA's production statistics on rice fit the results of surveys via end-user visits with more than 96% accuracy; 5.4 kg of TGAI/ha in 2003. Hereafter, the indicator on rice will be provided with the production statistics.

2. Modifications, new policies, strategies, goals or targets introduced since the first survey in 1994/5

Re-registration

In line with the demand for ever more safety assurance in using pesticides and increased international harmonization efforts, a re-registration program has been included in PMA as of December 1996 to ensure that older generation products that are still widely used meet today's qualified environmental and safety standards. Thus, a total of 244 products registered before December 1986 and whose data gaps were filled by manufacturers were re-evaluated. Of the re-assessed products, 39 were withdrawn from registration, 32 were cancelled for target crops or pests, 31 were re-classified for toxicity grade, 130 were changed for their pre-harvest intervals (PHIs), and 60 were amended with precautions for acute mammal or environmental exposure on December 6, 2001.

Special reviews

The pesticides with safety issues or banned for use in OECD countries have been reviewed in accordance with the PMA process. Pesticides reviewed are given as follows;

Year	Reviewed pesticide	Dealing action
1994	Alachlor, Captan, EPN, Folpet, Monocrotophos, Parathion, Phosphamidon	Limitation of annual production Enforcement on label, including pictogram
1995	Azinphos-methyl, Azocyclotin, Demeton-s-methyl	Amendment of label, including pictogram Reduction of annual production
1996	Carbofuran, Neoasozin, Omethoate	Amendment of label, including pictogram Limitation of annual production
1997	Procymidone, Ethoprosfos, Paraquat, Diazinon, Cartap	Cancellation of target crops, Enforcement of label & aquatic toxicity, Amendment of handling regulation
1999	Molinate	Being reviewed for safety on aquatic organisms

Impurities in TGAI

For TGAI being used for pesticide formulations containing known or unknown toxicants due to impurity, PMA announced the recognized toxic impurities which might contaminate in the final pesticide products. All the formulators have to provide RDA with the qualitative data on the impurity in case they manufacture the pesticides using relevant TGAI. The announced impurities are as below;

TGAI	Announced impurity	Violation content
Chlorothalonil	Hexachlorobenzene (HCB)	0.05 %
Dicofol	Compounds related with DDT	0.1 %
EDBC (Mancozeb)	Ethylene thiourea	0.5 %
Maleic hydrazine	Hdrazine	1 ppm
Oxyfluorfen	Perchlorinated ethylene	200 ppm
Trifluralin	Nitrosamine	0.5 ppm

Registration for minor crops

Recently the minor crops or the wild herbs such as leopard plant or perilla leaves are cultivated under greenhouse farming all year round. These agricultural practices are frequently accompanied with pesticide application in order to ensure the product quantity as well as quality. On the other hand, the proper pesticides are unavailable on the market mainly because most pesticide companies do not want to register the promising pesticides for the crops with relatively small cropping area. Furthermore, Korean Food and Drug Administration (KFDA) is adopting the lowest MRLs of a pesticide in/on the crop which is unregistered. In consequent, monitoring results of residue in/on minor crops done by KFDA manipulate the lowest value, which may result in unacceptable agricultural produces in terms of MRLs. Therefore, RDA is also implementing a national coordinating project "***Pesticide registration trials for minor crops***" from 1998 together with National Agricultural Cooperative Federation and some domestic pesticide manufacturers. As an output of the project, 65 pesticides for 30 minor crops were registered as of 2003. The reasonable MRLs for the registered pesticides in/on minor crops were set by evaluating the crop

residue data in the Joint Committee on Pesticide Residue under KFDA and RDA. In addition, KFDA recognized that so many different types of vegetables are available in domestic markets and adopts recommendation of RDA since October 1999: vegetable foods have to be sub-grouped into leafy, fruit, and root vegetables. Procymidone MRL in perilla leaves was changed to 5 mg/kg by adopting MRL in lettuce from 0.2 mg/kg in onion. Now, the MRL in perilla leaves is notified as 10 mg/kg.

Re-formulating pesticide products with expired shelf-life on the market

Pesticide products on the market with expired shelf-life are being collected by formulators voluntarily, transported to their factory, and re-formulated in accordance with the physicochemical parameters of their registration profiles. A remarkable reduction of obsolete pesticides on the market was achievable by adopting this system.

Registration of Bio-pesticides to support biologically-based farming practices

A differentiated registration scheme for microbial pesticides was already in operation in order to promote and spread the environmentally sound pesticides for crop protection since 2001. The principle of registration process basically was followed to tiered approaches on data requirements and assessment. Meanwhile, the share of products and the amount and value of bio-pesticides are still minor as in other OECD member countries. RDA is conducting an intensive work together with related agencies to extend the bio-pesticides to biochemical pesticides and natural enemies from last year.

3. Major risk reduction achievements over the last 10 years

In Korea, several organizations are involved in the mission of *residue monitoring* as far as agricultural produces are concerned; National Institute of Agricultural Science and Technology (NIAST) in the field, National Agricultural Products Quality Management Service (NAPQMS) under MAF at farmer's gate, and KFDA at the basket level. Monitoring activities of pesticide residues in/on agricultural crops in the field at harvesting have been concentrated on rice, fresh vegetables and fruits. The surveyed average residue data, which showed that no violation was recorded in rice, very small portion (less than 1 %) of violations in fruits, and still small portion (around 1%) of violations in vegetables. The monitored data on pesticide residues have been channelled back to the farmer so that they are able to reference pesticide use calendar to produce safe agricultural commodities. Likewise, a *voluntary monitoring programme* for agricultural produces listed on food chain of wholesale markets or department stores is being carried out to provide healthy and safe food supply. In case the produce is in violation of the MRLs, the farmer is unable to list his/her produce on the market for a certain period of time. This voluntary surveillance system is devoted in a greater extent to reduce dietary exposure caused by pesticide residues.

The ultimate deposit of applied pesticide will be the soil through direct falling-down of droplets in the spraying operation, washing-off the targeted crops by rainfall or by irrigation water or plant debris, etc. Also, soil gives a reservoir of the residues to be degraded or mineralized by soil micro-organisms. A survey on *pesticide residues in soil* is periodically carried out at four-year intervals for low-land paddy soil, upland soil, orchard soil and greenhouse soil. The typical finding from residue monitoring of pesticide was endosulfan residues, which were detected at the highest frequency of 53.5 % and at the highest concentration of 2.236 mg/kg, regardless of soils. In addition, monitoring results from various organizations gave relatively high detection frequency and concentration of endosulfan, which resulted in cancellation of registered vegetable crops.

Pesticide formulations have been developed according to cropping system of target crops. Several specific *formulations suitable for domestic agricultural practices*, such as rice transplanted with seedlings in paddy field or greenhouse farming, were commercialized as an output of collaborative R&D activities. Seed-dressing of pesticide in/on rice or treatment of mixed granule in nursery box of rice seedling prior to

transplantation of the seedlings gave rise to reduce labor cost for pesticide application as well as TGAI input per unit arable area by 70%. Moreover, those practices were able to reduce pesticide exposure dramatically during application. Twelve granular pesticide formulations for nursery box treatment are registered and 12,500 M/T was marketed, which covers 812,500 ha of rice paddy or 77% of total paddy land. Vinyl-house farming during winter season at all times accompanies frequent applications of pesticides due to unhealthy overgrowing of crops under warm and humid circumference with low intensity of sunlight. Smoking of smoke rods or pellets instead of spraying of water-diluted pesticide solution was able to reduce worker exposure of pesticide and application time as well in the closed environment.

A systematic *education and training program* for rational use of pesticides is provided for licensing of pesticide dealers and to end-users. The program is extended to extension officers in local governments and farmers. Since end-users frequently consult with the dealers to select pesticides to be applied, regular training for the pesticide dealers is provided on compensation basis; the trained dealers can get a license to handle the designated products. On the average, eight to nine thousand persons per year participate in the intensive training programme.

4. Least successful strategies which faced difficulties

Government has set the goal to reduce pesticide use by 50 % during past two decades. Even though many other incentives have been provided to achieve the goal including IPM, government-driven introduction of biological-based pesticides or natural enemies, most commonly practiced crop protection is with chemical pesticides. Furthermore, top ten pesticides account for about 50 % in the total pesticide sale. However, they are still used all over the world.

Agvet management is another vacant area in the Republic since RDA is responsible for pesticides used in agriculture only. The government had several meeting to designate the responsible agency taking care of biocides or agvet chemicals. For the time being, each chemical is being managed in the relevant organization.

Part B: The Next Ten Years

5. Future Work

Setting of PHIs for successive harvesting crops like fruit or leafy vegetables under greenhouse farming should urgently be done to secure safety of pesticide residue, since the PHIs were established with the data generated in the open air environment. The PHIs has to be addressed in the good agricultural practices in line with IPM programs.

Worker re-entry interval in the field applied with pesticide is another future work to be conducted to reduce indirect exposure to the toxicants.

Providing *portable kits for on-site residue monitoring* using immune-assay system from pesticide manufacturers is a promising solution to make decision for harvesting time of the crop.

Crop strengtheners or environmentally friendly crop protection agents are illegally on the Korean market without registration, which resulted in crop damages for farmers including poor protection and relatively high costs. *Quality control and assurance methodologies* have to be established to reduce the damages as well as unpredictable risk to workers and environmental compartments.

Part C: Optional

6. Miscellaneous/specific questions some countries/organizations wanted to ask other countries in the questionnaire

Is aerial spraying authorized?

Only government-authorized pesticides are applied for aerial spraying. License is essentially required to apply pesticide aerially and pest control agent has to inform provincial government the pesticides and targeted area in advance. RDA plans to set buffer zones to protect non-target organisms (aquatic organisms and honeybees) from next year.

How are the problems of private/amateur use being addressed?

No different regulations for professional and private/amateur pesticide users are provided under PMA, both users have to comply with regulatory standards for pesticide uses.

Is the use of “low-risk pesticides” permitted without registration?

No pesticide is permitted without registration.

Is tank-mix application authorized?

Tank-mixing is allowed in case data are provided by pesticide manufacturers themselves. The data to be submitted include phytotoxicity on target crop and acute toxicity interaction.

Are pre- and post-treatment activities (i.e. mixing, cleaning) specifically addressed and how?

Precaution for washing mixing tanks is given through intensive training programs provided by extension offices, agricultural cooperatives and pesticide manufacturers, etc.

Contact Person:

Byung-Youl Oh
Phone: 82-31-290-0579
Fax: 82-31-290-0508
E-mail : byoh@rda.go.kr

NETHERLANDS

Part A: Evaluation of Pesticide Risk Reduction Efforts since 1994/5

1. Introduction of the policy framework/context for pesticide risk reduction

The Multi Year Crop Protection Plan (MYCPP) described in the first survey started in 1991 and ended in 2000. The plan provided concrete measures to reduce the use of agricultural pesticides and their emission (such as regulations concerning the use of certain pesticides and application methods), but also training activities for growers and farmers. During this period the MYCPP was evaluated several times. The main results of the last evaluation in 2002 are described in more detail in the answers of questions 3 and 4. Below is a brief summary of the evaluation of the MYCPP together with the data and indicators used.

Goals of the MYCPP and achievements

One of the goals of the MYCPP was to reduce the total volume of agricultural pesticides with 50% as compared to the reference period 1984-1988. The total volume of active substances (kg) sold by industry was used as an indicator. A 50% reduction in the total volume of agricultural pesticides was achieved. This reduction was mainly due to a strong reduction in the use of soil fumigants (-88%). The total volume of insecticides and fungicides remained more or less similar during the period 1984 – 2000.

Another goal of the MYCPP was to decrease the dependence on agricultural pesticides. No target had been defined but three *indicators* were used to evaluate changes in the dependence on agricultural pesticides:

- a) The total volume of pesticides adjusted for chemical substitution: a lower volume of pesticides does not necessarily mean a lower dependence since newly developed pesticides may be more effective than older ones and the use of new pesticides may therefore lead to a reduced volume of pesticides but not to a decreased dependence.
- b) Developments in crop protection on farms or nurseries:
 1. Area (%) with tolerant or resistant varieties,
 2. Area with non-chemical control of the most important pest or disease,
 3. Area treated with biological pesticides,
 4. Area subjected to forecasting or advising systems,
 5. Area subjected to a green label (production according to certain rules),
 6. Number of companies with an approved environmental plan,
 7. Number of participants in production chain projects in which the use of pesticides is registered.
- c) Changes in knowledge and attitude of the farmer/grower.

Ad a) The dependence on soil fumigants decreased during the period 1992 – 2000 since the total volume of soil fumigants as well as the total volume adjusted for chemical substitution decreased during this period. Thus, the decrease in kg active substance was not due to the use of new and more effective

substances but due to an actual decrease in the use of chemical pesticides. The dependence on insecticides remained more or less the same during this period whereas the dependence on fungicides increased.

Ad b).

1. The cultivation of cultivars with resistance against a certain disease has increased in some crops (e.g. potatoes resistant against *Globodera* spp.) while in other crops no increase in the use of resistant cultivars occurred (e.g. apple scab).
2. Biological control is common against pests in glasshouse grown fruit vegetables and against spider mites in fruit trees. In other crops, biological control is of minor importance. The area subjected to mechanical weed control has increased in maize and nursery stock while in other crops no increase in mechanical control was observed.
3. The interest for biological PPP's has increased but its use is still limited mainly due to the fact that they are not always registered as pesticides but also due to unfamiliarity with these agents.
4. The use of forecasting systems showed an increased tendency in potato, lily, apple and pear. It is unclear if this tendency has also lead to a decreased use of chemical pesticides.
5. The area grown under green label has increased for glasshouse crops and for fruit trees. In 2000, 80% of the glasshouse nurseries and more than 30% of the fruit tree nurseries had a green label.
6. The number of companies with an approved environmental plan is very small.
7. Registration of pesticides on farm/nursery level only increased at the end of the MYCPP.

Ad c). The attitude of farmers and growers towards crop protection has changed. Farmers and growers have become more aware of the negative side effects of chemical pesticides and their knowledge of integrated crop protection has increased.

A goal of the MYCPP was also to *reduce the emission* of pesticides and their impact on the environment. The emission of pesticides was calculated using a model. The emission was strongly reduced during the period for each of three different environmental compartments:

Soil and ground water	-79%
Air	-54%
Surface water	-79%

An *environmental indicator* was developed to assess the impact of pesticides on the environment. The indicator is based on: 1) the level of exposure of aquatic organisms to pesticides and on the toxicity of the pesticides towards aquatic organisms and 2) the extent of leaching to the groundwater. The impact of pesticides on the environment according to this indicator also decreased with more than 50% as compared to the reference period (1984-1988).

Economic analyses have not been used in the evaluations but it was observed that farmers and growers are driven by economic forces to apply crop protective measurements rather than by ecotoxicological considerations.

2. Modifications, new policies, strategies, goals or targets introduced since the first survey in 1994/5

The Dutch government is working on a *new program to stimulate sustainable plant protection*. One of the goals is that the concentration of (toxic residuals of) *pesticides in surface water* will be below the Maximum Permissible Concentration (MPC) in the year 2010. According to calculations, the environmental impact by the application of pesticides should, therefore, be reduced by 95% in 2010 as

compared to the reference year 1998. Other important goals are: the reduction of problems with the preparation of *drinking water* due to pesticides, improvement of labour conditions, and retention of a competitive Dutch agriculture.

The goals will mainly be achieved by *regulations*, for example those concerning the registration of pesticides and water waste management. Several pesticides with a high environmental impact have already been forbidden since 1998. Regulations will also be made to oblige growers and farmers to imply certain integrated control measures and to make a crop protection plan. Besides regulations, sustainable plant protection will also be stimulated through *research projects* on integrated crop protection and projects on transfer of knowledge between research and practice.

Non-agricultural issues: The Dutch Pesticides Act regulates biocides and non-agricultural use of pesticides in a way similar to the agricultural use of pesticides.

3. Major risk reduction achievements over the last 10 years

Major achievements

During the period (1991-2000) of the Multi-Year Crop Protection Plan (MYCPP) a major volume reduction of pesticide use was achieved for most groups of pesticides. The focus was mainly on volumes under the assumption that lower volume leads to risk reduction.

At the end of this period the pesticide use was reduced compared to the reference period (1984-1988) as follows:

- soil fumigation: - 88%
- herbicides (including haulm killers):- 33%
- insecticides and fungicides: - 3%

The emission of pesticides was reduced as follows:

- emission to soil and groundwater : - 79%
- emission to the air: - 54%
- emission to the water surface: - 79%

The period of 2000 – 2004 has not been evaluated yet.

Cost-effective policy tools or activities, best practice

Most effective are *mandatory regulations*. However also *education of farmers* is very important in order to achieve the goals. Training programs about integrated pest management were initiated by farmer groups and subsidised by the government. Participation was on a voluntary basis. Farmers could experiment with newly developed techniques and methods on their own farm under supervision of an extension officer. This way of working was often instructive for both farmer and officer. The results of the training programmes were published in agricultural magazines, to get a broader spread of the knowledge. These training programmes have created a change in awareness of the farmers towards crop protection.

This change in awareness resulted only in risk reduction actions under certain conditions. In the evaluation of the Multi-Year Crop Protection Plan the following conditions were identified as most effective:

- Mandatory regulations, like for soil fumigation (see examples a1, a2 and c2),

- New alternative techniques must be available. Therefore researchers and farmers have to cooperate with each other (see examples a4, a5, b2 and c1),
- Economic stimulants (see examples b1, d2 and e1),
- A pesticide is no longer available, i.e. because it is forbidden or a harmful organism has become resistant. In that case, farmers will have to search for alternative solutions (see examples a3 and d1),
- The farmer must be willing to take risks in disease management (see example at question 4),
- Stimulants from the government, like subsidising: training programmes (see example above), promotion of environmental friendly grown agricultural products (see example e1) and research for new techniques and methods (see examples a4, a5, b2 and c1).

Examples:

a. Soil fumigation

1. In 1992, the government abolished a regulation that obligated farmers to use soil fumigation to control potato cyst nematodes when potatoes were grown in certain (high) frequencies.
2. Since 1993, the government has forbidden to use soil fumigation more often than once every 4 years. Nowadays, soil fumigation is allowed once every 5 years maximum.
3. Research has shown that fumigation in heavy soils was less effective than was thought. Moreover, soil bacteria seemed to degrade fumigants after frequent use, so they became even more ineffective during the last years. So, farmers had a reason to search for other methods.
4. The above regulations (see a1 and a2) stimulated the development and introduction of potatoes with a broader resistance against potato cyst nematodes by the agro-industry.
5. The government made it mandatory to use the pure isomere cis-dichloropropene instead of cis/trans dichloropropene. Because cis-dichloropropene contains 50% less active substance, this meant an important decrease in the use of soil fumigants. Unfortunately the pesticide industry will end the production of cis-dichloropropene because it is more expensive to produce.

b. Herbicides

1. Development of more advanced mechanical weed systems. The success of these systems varied by crop, weather and soil conditions, but where most successful in maize, because since 2000 mechanical weeding was a condition to get subsidies from the EU (Cross Compliance). Subsidies was given only to farmers who applied mechanical weeding and did not use more than 1 kg a.s. herbicides per ha.
2. Development and introduction of Low Dose Systems (LDS) and improvement of spraying techniques made spraying more effective, so less active substance was needed.

c. Fungicides

1. Forecasting and advice systems were developed and introduced for some major fungal diseases. With these systems chemical treatment against i.e. Phytophthora in potato can be more effective.

d. Insecticides

1. The introduction of biological control agents was most successful in tomato, cucumber and sweet pepper. The reason behind this was that the insecticide dichloorvos was no longer available. Dichlorvos was highly effective and, therefore, one of the most used insecticides in green houses.
2. The use of bees for pollination in greenhouses is economically interesting. This was also a stimulant to decrease the use of insecticides that are harmful to bees.

e. Economic stimulants

Retailers nowadays demand more conceiving the way agricultural products are produced (environment, food safety). The agro-food industry has, therefore introduced certificates. A product with such a certificate guarantees that the farmer has used good agricultural practise. This certificate has been a major economical stimulant to farmers, not because they get higher prices, but because their products are better saleable. From all fruit growers and green house growers about 50% or more is certificated. The government subsidises advertisements that stimulate consumers to buy certificated products.

f. Reduction of emission

1. New emission reducing spraying techniques were developed and introduced. The main stimulant for developing these techniques was the introduction of stricter rules for registration of pesticides regarding the effect on the aquatic environment.
2. A new regulation forbids farmers to spray nearby waterways and orders them to use the new spraying techniques (mandatory).

Since 1996 everyone who uses pesticides on a professional basis has to possess a specific licence. One needs to have a certain amount of knowledge about safe use (labour safety) and integrated crop management to get this licence. The licence has to be renewed every 5 years. Because this licence is mandatory, also farmers who do not show any interest in risk reduction have to keep up there knowledge.

Stakeholder involvement

Stakeholders were involved in the development of the Multi-Year Crop Protection Plan. They signed the covenant to show their commitment. During the implementation of the plan they participated in several working groups.

Training programs were often initiated by the agricultural sector (see above). An example is the Masterplan Phytophthora which stimulates farmers to remove initial sources of Phytophthora (like potato remains on the field) and use forecasting systems and new spraying techniques.

4. Least successful strategies which faced difficulties

The representatives of farmer groups signed the covenant of the Multi-Year Crop Protection Plan. They had political motives to do so. The individual farmers, however, made their own choices. Their choices were often based on economical rather than on political principles. Most farmers chose only to use more environmentally friendly methods when they were economically interesting, unless economical stimulants were offered (by government or market) or law regulates it.

For example, the introduction of forecasting and advice systems for scab in apple and pear and Botrytis in flower bulbs were less successful than for Phytophthora in potato. The reason was that the systems for scab and Botrytis needed more labour and know-how, while the risks for crop damage could be

high when spraying less frequently. Farmers were not willing to take these risks, because the economical benefits of the new systems were too low.

Another example is the use of mechanical weeding systems. In most crops the introduction of these systems was not very successful. Only in maize mechanical weeding was a success, because of the cross compliance regulation (see question 3, example b1).

Part B: The Next Ten Years

5. Future Work

National agenda

The most important problem areas in the Netherlands are:

Ecological quality

Aquatic ecosystems are still insufficiently protected although the number of locations where MPC-levels are exceeded has decreased to some degree. The emission of pesticides used for non-agricultural purposes, like for example weed control on pavements, also plays an important role in the pollution of aquatic ecosystems.

Drinking water quality

The quality of ground - and surface water, used to produce drinking water is still an matter of concern. Additional purification in order to remove pesticide contamination is required in the majority of the drinking water plants, resulting in high costs.

Labour protection

Although legislation requires such, not all employers execute a Risk-Inventarisatie and Evaluation programme. The protection of employees, who apply pesticides or work in pesticide treated crops is, therefore, not guaranteed.

Food-safety

Surveys show that imported food products exceed more often MRL's than nationally produced products. This is partly due to the fact that in the EC MRL's are not yet fully harmonised

Best areas for international collaboration

Areas for international collaboration are:

- Work sharing regarding the evaluation of pesticides and setting of MRL's,
- Facilitate the implementation of sustainable use and risk reduction by making available relevant experiences on risk reduction to other countries.

Part C: Optional**6. Miscellaneous/specific questions some countries/organizations wanted to ask other countries in the questionnaire*****Is aerial spraying authorized? If so under what conditions?***

- The object is at least during, and one hour before and after spraying to be marked with official warnings signs
- No outsiders are allowed on the object during spraying
- Wind speed < 5 m/s (< 4 m/s for ULV), temperature < 25°C, relative humidity > 50% at 2 m above the object
- No objects with the longest side < 100 m
- Not allowed on orchards, forest and trees
- Not within 100 m downwind or 50 m upwind from sensitive areas as schools, hospitals, nature reserves etc
- No sprayings higher than 4 m (3 m for ULV) above the crop
- The utmost carefulness to prevent contamination outside the object
- No spraying within 14 meter of surface water
- A register with the objects and (the date of) the applications
- An announcement in writing of the applications at the relevant council office

How are the problems of private/amateur use being addressed?

Very toxic (skull) pesticides can only to be sold to professionals with a licence. This prevents private/amateur use. Products for the private sector are often marketed in special packing, to facilitate correct application and prevent contamination.

At present conditions for private/amateur use are reconsidered which may lead to a new policy to address problems in this type of use.

How is the effectiveness of communication and information ensured?

The Dutch Ministry of Agriculture finances a programme that stimulates the transfer of knowledge between researchers and farmers/growers. This programme should ensure that tools and methods that decrease the use and dependence on chemical pesticides are being implemented in practice.

The Dutch Ministry of Agriculture subsidises research projects about risk reduction methods. One of the conditions to get this subsidy is, that the results of the project are communicated with farmers.

Is the use of low risk pesticides authorised?

Some low risk pesticides are listed in an exemption regulation after careful consideration of possible risks. The listed applications of these pesticides are exempted from the Pesticide Act, provided the application-requirements are met.

Are pre- and post-treatment activities (i.e. mixing, cleaning) specifically addressed and how?

Only keepers of a licence are allowed to apply pesticides. Trainings have, therefore, been developed and organised. Technical aspects of pre- and post treatment are part of the curriculum of these trainings. Legislation regulates the disposal of cleaning water and packaging materials.

What are the systems in place for gathering information on pesticide poisoning incidents?

Labour accidents must be reported to the Labour Inspectorate of the Ministry of Social Affairs. Poisoning incidents can also be reported at the National Poisons Information Centre of the National Institute of Public Health and the Environment. It provides advice on intoxications by telephone to medical professionals and also monitors these intoxications to reports trends to the authorities.

What are the systems in place for gathering information on pesticide impact on vulnerable groups?

The National Poisons Information Centre also monitors en reports pesticide impact on vulnerable groups as children of 0-4 years old and animals.

Contact Person:

NEW ZEALAND

Part A: Evaluation of Pesticide Risk Reduction Efforts since 1994/5

1. Introduction of the policy framework/context for pesticide risk reduction

New Zealand does not have an explicit policy framework, goals or targets, for governing pesticide risk reduction efforts. Rather there is a wide-spread acceptance of a risk reduction philosophy, with a number of programmes run by a number of different agencies contributing. These programmes are loosely coordinated by means of seminars aimed at ensuring scientists, policy analysts, regulators, non-government organisations and pesticide users stay in touch.

Because the work is delivered by different agencies, there tends to be a division between regulatory programmes and non-regulatory programmes such as public/private partnerships. To illustrate, our regulatory programme involves the setting of controls for pesticides, and then enforcement activity to ensure compliance. An example of a non-regulatory programme (run by a different agency) is the collection of unwanted pesticides from farms for the purpose of disposal.

There has been only limited consideration of the possibility of uniting the various programmes within a policy framework in order to gain efficiencies and improve risk reduction outcomes. "Pesticide risk" crosses at least five ministerial portfolios and it is very difficult to get agreement (and implement) strategies or policy frameworks that cross these boundaries. Thus "waste" is seen as being within the environment portfolio and "agrichemical collection" is a component of our waste strategy. On the other hand, our programmes to improve crop protection strategies, including the substitution of non-chemical techniques for chemicals, come under the agriculture portfolio even although the benefits are largely in the area of public health and environmental improvement.

2. Modifications, new policies, strategies, goals or targets introduced since the first survey in 1994/5

Since the Uppsala Workshop, New Zealand has developed and implemented completely new pesticide legislation. Regarding environmental protection, the key Act is the Hazardous Substances and New Organisms (HSNO) Act 1996, delivered by the (New Zealand) Environmental Risk Management Authority. The HSNO Act sets out decision making processes for the approval of new pesticides. Previously-registered pesticides must be "transferred" to the new legislation, and in doing this, new controls are set.

The transfer of pesticides has been the major focus of regulatory effort over the past two years with most classes of pesticides (the exception is vertebrate pest poisons) transferred on 1 July 2004.

The HSNO Act also provides for reassessment of previous approvals, that is re-registration.

3. Major risk reduction achievements over the last 10 years

Without a doubt, the major success has been reduced use of organophosphates in the fruit industry. Until the early 1990's, organophosphates were the mainstay insecticide in horticulture. Use fell virtually to zero within five years.

Three reasons behind success were:

- Willingness on the part of growers to make the change (growers were well-aware of the health risks they personally faced in using these products)
- Availability of well-researched alternative spray programmes using integrated pest management approaches;
- A “market “driver”: New Zealand horticultural production is mostly exported and importing countries were signalling that organophosphate residues on produce were unacceptable.

There was no strong “regulatory driver”: controls attached to the use of organophosphates were not changed.

4. Least successful strategies which faced difficulties

There are two areas of pesticide use where we think risk reduction concepts are not well-embedded. The first of these is in pastoral agriculture where there is significant use of herbicides in particular, and where very few farmers have ever done training courses. The reason given by farmers is that the available training courses are not suitable for them. Training providers on the other hand, say farmers do not attend because they are either ignorant of, or refuse to acknowledge, the risks associated with the products they were use.

Now that a HSNO approved handler control has been applied to most pesticides, we expect to make faster progress in farmer training.

The other area of pesticide use where we have not yet gained “traction” is in the household/domestic area. While risk is theoretically capped by the small size of retail packs, there is evidence of disposal of unwanted pesticides to urban sewerage, and a general lack of knowledge on how to correctly use these products. No government agency has yet been willing to develop and implement education programmes for this group of users.

Part B: The Next Ten Years

5. Future Work

As part of the transfer of pesticides to the HSNO controls, many pesticides now require an “approved handler”, that is, users of pesticides will need an appropriate qualification to show they are competent to use the pesticide. Very few pastoral farmers have this qualification at the moment. This means around 50,000 people will need to attend pesticide training course over the next 2 years. This is a significant challenge for education providers.

The reassessment provisions of the HSNO Act are as yet untried. We have two pesticide reassessments scheduled for the near future, and it is hoped the experience of this will lead to a much more active reassessment programme.

Part C: Optional**6. Miscellaneous/specific questions some countries/organizations wanted to ask other countries in the questionnaire*****Aerial spraying***

Aerial spraying is legal in New Zealand in both rural situations, such as crop spraying, and in urban situations, such as programmes to eradicate exotic insect pests. Given our rugged terrain, aerial application is sometimes the only method by which a pesticide can be applied.

We see the aim as to minimise the risk of off-target movement of pesticide, and there is always some risk of this regardless of the application method. We think the critical issue is first to determine acceptable environmental exposure limits, and for people, tolerable exposure limits; and secondly, ensure exposure limits are followed.

Private/amateur use

Private or amateur use of low and medium hazard pesticides such as in and around the home, is permitted. Risk is controlled to some extent by stipulating maximum pack sizes. Amateur use is, as identified above, an area where we do not think we have adequate traction at the moment.

Effectiveness of communication

We communicate with the regulated community by means of publications, information on websites, seminars etc. We have not done research examining how effective our communication is. New Zealand is a small country; pesticides issues are often picked up by the media. Although this coverage is sometimes not well-informed, it at least has the effect of ensuring the general public are aware of pesticide risk.

Low risk pesticides

All pesticides must be registered although some of these have relatively few controls attached to their use.

Systems for gathering information about poisoning

Hospitals must report poisoning incidents but few such reports are ever received. We believe there is an element of under-reporting because, for instance, pesticide operators who have been exposed to a pesticide may not go to a doctor, or the doctor may fail to diagnose poisoning. We also believe we have instances of the reverse problem, of people claiming they have been poisoned by pesticides, but where there is no evidence an exposure has ever occurred.

Pesticide Impacts on Vulnerable Groups

We have done some studies of occupationally-exposed persons. Generally, however, our information gathering systems do not specifically target vulnerable groups such as infants or children.

Contacts:

Ian Cairns
Senior Adviser
Ministry for the Environment
CC: John Reeve
Programme Manager Toxicology
New Zealand Food Safety Authority

NORWAY

Part A: Evaluation of Pesticide Risk Reduction Efforts since 1994/5

1. Introduction of the policy framework/context for pesticide risk reduction

The Ministry of Agriculture is responsible for the administration of the pesticides legislation in Norway. Other bodies are invited to provide advice during the approval process, such as the environmental authorities. In addition, good cooperation exists with the authorities which deal with chemicals and the risks posed to health and the environment by such.

Though Norway is a member of the EEA, Norway's derogation from the pesticides legislation is not limited by time. We have our own, which, since the early 1960's, has been very restrictive, indeed, it is regarded as being one of the world's strictest. Five year approval periods and the use of the substitution principle over many years have restricted the number of pesticides in use and improved their quality.

Pesticides are regarded as being a valuable input factor in the production of plants. However, Norway aims to make its agricultural sector less dependent on pesticides and to reduce the risks connected with their use. The Minister of Agriculture has stated that it will be necessary to continue this work, and that all stakeholders should bear in mind the precautionary principle when working with pesticides. He is of the opinion that increased knowledge within preventive measures and alternative methods is important as far as efforts to reduce the risks involved in using pesticides are concerned. Good plant health, more integrated production and more organic farming are also important factors.

Norway aims to have 10% of all farming as organic by 2010. The Government is to subsidize the transitional period and production after that. The main reason for this is not just to reduce the risks posed by using pesticides, but also because the Minister of Agriculture argues that more organic farming would increase environmental standards in conventional farming. This would lead to less use of pesticides.

The Ministry of Agriculture is responsible for the putting into force of risk reduction plans for pesticide use. The plans have been formulated in cooperation with the environmental authorities. The farmers' unions have also had the opportunity to air their views and most of the finance comes from the subsidies to farmers in the form of an agreement between the Ministry and the farmers' unions.

When the first OECD survey was conducted, Norway had a plan designed to reduce the use of pesticides. The activities included in this are described in the survey and most of the recommendations from the Uppsala workshop had already been covered.

In 1997/98 this plan was evaluated. The main concrete criterion used was sales statistics. These showed a marked decrease (54%) in the sale of pesticides over the period. However, this does not provide a true picture of the risk reduction. A survey was also conducted amongst farmers to gain an impression whether their attitude had changed as a consequence of the plan's activities. The evaluation's conclusion was that Norway was at the forefront in establishing activities and measurements for risk reduction and that it was likely that risks had been reduced during the period. Nevertheless, a need did still exist for further risk reduction and it was felt that there were additional opportunities for this. No in-depth

economical analysis was undertaken, but it was stated that there was an additional need and, indeed, further opportunities for risk reduction which would not produce unacceptable economic consequences for Norwegian agriculture.

Norway has also developed indicators which can be used to characterize the development of risks posed to health and the environment through the use of pesticides over time (see below). Experience from this work has been of great value to international work in this field (e.g. OECD), to which Norway has contributed.

2. Modifications, new policies, strategies, goals or targets introduced since the first survey in 1994/5

As a consequence of the conclusions from the evaluation of the first plan, a new plan for the period 1998 – 2002 was formulated, this time focusing on risk reduction.

The aims of this plan were fourfold:

- The risks to health and the environment posed by the use of pesticides should be reduced by 25% during the period.
- Occurrence of pesticides in food and drinking water should be reduced as much as possible and not exceed MRL's.
- Pesticides in ground water should not occur and certainly not exceed the MRL's for drinking water.
- Occurrence of pesticides in brooks and surface water should be reduced as much as possible and not exceed levels which can harm the environment.

The plan was built on five elements:

- Approved pesticides with the best possible health and environmental profile and with labelling which provides sufficient information.
- Users' knowledge regarding biology, pesticides and spray techniques should be good.
- Optimal frameworks for reducing risks through the use of pesticides, alternative methods, good spraying equipment etc.
- Monitoring of pesticide residues in food and the environment
- The long-term build-up of knowledge.

The main activities were as follows:

- Measuring methods and indicators were formulated. These could be used to describe the development of the risks posed by the use of pesticides over time. They are based on the intrinsic properties of the substances and calculated risks. Combining those with the amount used of each product will give an expression of the risks posed to health and the environment.
- The system for calculating environmental tax was changed. The new system is based on the extent of the area sprayed. The products have been classified into seven categories. Subsequently, the highest taxes are levied on those products which represent the highest risk. The level of tax also has been increased during the period.
- Harmonizing of the approval periods. Products for the same purpose are evaluated at the same time. This makes it easier to use the substitution principle. In addition, the properties of the formulation components and metabolites are given more emphasis in the approval process.

- In 1999 it became mandatory for professional users to keep crop spraying logs. Control activities at the farm level have also been given greater attention.
- An approval regime for organisms used in plant protection has been established.
- Mandatory authorization of professional users was established in 1997. The authorization has to be renewed every ten years. A database containing the names of all authorized persons has been set up.
- From 2001, it became mandatory to test spraying equipment. The approval period is five years.
- The monitoring program for food has been extended to include more substances. A program for the environment was established in 1995, which has been extended during the period.
- Systems for integrated pest management have been developed. A new and improved course on this subject is offered. This area is also an important part of the authorization course. The systems for pest forecasting and treatment thresholds have also been developed.
- Research and development were encouraged to build up knowledge over time. Results from those activities have improved the knowledge of the authorities, advisers and users.

For non-agricultural sectors, the policy is to restrict the use of pesticides as much as possible. Non-professional growers may not be granted authorisation for the buying and using of most of the pesticides used in the agriculture. However, they are permitted to use certain products with low toxicity or products which are diluted and thus ready to use. Such products are only sold in small packages and a high level of environmental tax is levied on them. Most of them are thus very expensive.

The most toxic pesticides may not be used in areas open to the public, such as parks, gardens and other public areas. The sprayed areas must be marked with signs approved by the authorities.

3. Major risk reduction achievements over the last 10 years

We evaluated the risk reduction plan for 1998 – 2002 in 2003. Using the risk indicators, it was found that the risk posed to health had been reduced by 33 %, and that the risk to the environment had been reduced by 37 %, compared to the average for 1996 – 97. A survey of farmers also showed a positive development in their attitudes and practices in relation to the use and handling of pesticides during the period. 40% of respondents said that their use of pesticides had been reduced significantly over the past 5 years. The main conclusion of the evaluation was, therefore, that the aim of a 25% reduction in the risks posed to health and the environment had been achieved. Nevertheless, the situation is still not entirely satisfactory. The aims for residues in food and water resources have not yet been fully achieved. It should be pointed out, however, that the effects of many of the plan's activities will only be noticeable after a longer period of time.

The main reasons for these achievements are that the activities in the risk reduction plan were put into force and followed up thoroughly. It was also of importance that the farmers' unions had agreed to the plan and how to finance it, and thus felt that they were an important part of the process. It is difficult to point to individual activities and say that they contributed more than others. However, the increased knowledge growers gained regarding how to handle and use pesticides, the potential risks involved, integrated production and other alternative methods has contributed significantly. Significant attention is paid to these subjects on the authorisation course. The further development of the pest forecast and treatment threshold systems has also been of great importance.

The new tax system, which drew attention internationally, has led to a decrease in the sales of products in the highest classes and an increase in sales of products in the lower ones. This tax was

increased during the period. In the survey, the majority of farmers say that besides more knowledge, the increased costs involved in spraying is one of the main reasons for reducing the use of pesticides.

As a consequence of the changes in the approval process, it has been easier to use the substitution principle. This has helped lead to the discontinuation in the use of the most unsafe products where alternatives are available.

The plan also has stimulated research and development which has given the authorities and users more knowledge.

We have not evaluated which activities were most cost-effective. However, the development of an Internet-based information system for pest forecasting and treatment thresholds has been the most expensive (approx. 19 mill Nkr over the five year period). In the survey, 32% of the growers said that this service had contributed significantly to the decrease in pesticide use. Advisers also think that the system is of great value in that it improves the advice furnished to farmers.

4. Least successful strategies which faced difficulties

Some of the activities proposed in the plan did not produce very useful results. One example is that the regulatory authorities were supposed to take into account “the benefit to society” of the use of the individual product during the approval process. Attempts were made to develop a tool which could be used for that purpose. However, this turned out to be a most complicated process, partly because it demanded a great deal of resources and also because it was difficult to use. Moreover, the use of such a tool was not regarded as providing significant new information which might be useful during the approval process.

The usefulness of a “prescription system” for the use of products which are not approved for a certain purpose was also evaluated. This was supposed to help restrict the use of the most unsafe products. However, we concluded that this should be taken into account during the approval process. It was also thought that it could be useful in situations where approved products are not available or are not approved for certain purposes (e.g. minor crops). However, in such cases it is possible to grant an exemption from the ordinary approval conditions and it was deemed more appropriate to use this opportunity in those cases.

One problematical area is that growers do not dispose of products which, for some reason, are no longer in use. Such products may be stored on the farm in a way that can pose a risk to health and the environment. The legislation says that one has a duty to take such products to plants approved for the disposal of this type of waste. Nevertheless, many farmers say it is too expensive and time consuming. An “own return system” for pesticides was thus assessed. Calculations showed that this would be very expensive to run and, in fact, not cheaper for the farmers. Moreover, the current system for disposal of dangerous waste is very good. It was felt that taking the pesticide waste to those plants would not be more time-consuming than establishing a new system would. We therefore concluded that a new system should not be established. Instead, the provision of information on the growers’ duties pursuant to the legislation should be intensified.

Until 1st of January 2001 testing of spraying equipment was voluntary and it is subsidised. Despite many campaigns and much information work, it was difficult to motivate farmers to carry out such testing. From 2001, it was made mandatory and all field equipment in use is required to have been approved before 1st January 2005. However, only a few sets have been tested. It is difficult to find a reason for this, but it is assumed that farmers with old equipment may be waiting as long as possible to see if it is worthwhile or if they would be better off by buying a new sprayer.

The changeover to organic farming has not been as rapid as expected. In spite of action plans and economic carrots, only 3.7% of farmed land was organic by the end of 2003. The reasons for that are

complicated. However, one of them is thought to be that conventional Norwegian agricultural products are of good quality and produced under controlled conditions which ensure good animal and plant health, as well as good ethical standards. As such, there is little undesirable pollution. Most consumers are not therefore willing to pay the extra for organic products. This limits the market.

Part B: The Next Ten Years

5. Future Work

One of the conclusions drawn from the evaluation of the plan for 1998 – 2002 was that *a new plan for the next five years* should be formulated. Again, the farmers' unions agreed to cooperate and this is to be financed by subsidies. The plan has now been approved by the Ministry of Agriculture and will last until 2009.

The aims of this plan are the same as for the previous plan. This means that, after the ten year period, the risks posed by the *use of pesticides should be reduced by 50%* in total. It consists of the same elements as the previous plan and most of the activities therein are to be continued.

It should be emphasized that *the consequence analysis with cost-benefit assessments* should be a part of the approval process. An analysis of the economic consequences of reducing the use of pesticides by known, preventive and non-chemical methods, as well as need-based use, should be performed. This should be performed in cooperation with the other Nordic countries.

It should also be stressed that *increased knowledge amongst growers* and advisers is very important and that this work must continue. It should include all aspects, both in relation to chemical plant protection products, as well as preventive and alternative methods. Further research and development should include *models for risk assessment*. Potential combination effects of different chemicals should be looked into additionally. The testing of new products is also regarded as important, both for substitution and for solving the problem concerning a lack of products for minor crops. Further development of the *treatment thresholds* and *warning system* is important.

International cooperation is one of the points in the plan and is regarded as important. At a Nordic level, the Nordic Ministers of Agriculture have agreed on a declaration to reduce the use of pesticides. They also have declared that Nordic cooperation must be strengthened in the efforts to reduce use and risks from pesticides. It has also been underlined that Norway should increase its international efforts and participate actively in the work of EU, OECD and FAO.

The efforts to *increase organic farming* will continue and the aim remains that, by 2010, 10% of the agricultural area should be organic.

Part C: Optional**6. Miscellaneous/specific questions some countries/organizations wanted to ask other countries in the questionnaire*****Aerial spraying***

Certain pesticides may be distributed from helicopters by special authorized personnel and equipment. It is used only in forests and only to a very small extent. Such spraying must be authorized by the local authorities and performed according to a special regulation.

Private/amateur use

As described above under non-agricultural use.

Effectiveness of communication

All decisions, changes in authorizations and other information are published on the Internet. Written material is also distributed. The advisers and the dealers (?) also play an important role in this process. However, one challenge lies in the fact that it is difficult to distribute information in a way which reaches all users and for the users to keep themselves up dated. There is still a need for improvement in this area.

Low risk pesticides

No. All products, organisms included, which shall be marketed as plant protection products have to be approved.

Is tank-mix application authorized?

To a certain extent when it is accordance with the label?

Are pre- and post-treatment activities (i.e. mixing, cleaning) specifically addressed and how?

Advice is given on how to fill and clean the spraying equipment and how to clean empty packages. It also is a subject in the authorization course.

Systems for gathering information about poisoning

There is no special system for this and that is an unfortunate omission.

Pesticide Impacts on Vulnerable Groups

No special system.

Contact Person:

SLOVAK REPUBLIC

Part A: Evaluation of Pesticide Risk Reduction Efforts since 1994/5

1. Introduction of the policy framework/context for pesticide risk reduction

For pesticide risk reduction efforts, Slovakia realizes several steps and regulations to prevent risk of dangerous pesticides in the form of risk management- cautions and constraints of the usage of pesticides in areas that present the risk (restriction of usage, air applications, restriction of the use on several areas- e.g. National Parks and areas for Natura 2000). These risks were evaluated by the National Reference Laboratory of the University of Veterinary Medicine seated in Košice – from the point of view of potentially adverse effects of pesticides on animals and aquatic organisms.

2. Modifications, new policies, strategies, goals or targets introduced since the first survey in 1994/5

Strategies regarding risk reduction are based on the principle that SR as a member of EU countries implements re-registration and re-classification of active substances and plant protection products. Slovakia considers that the number of registered plant protection products will be reduced by 50%.

The main strategy legally introduced via national legislation was to authorize pesticides used by non-professional users. Within the implementation of the EC acquis, the use of prometryn in certain crops has become restricted. From 2001, persons who are placing pesticides on the market are obliged to send MSDS to Toxicological and Information Centre. Non-chemical solution of crop protection has been introduced. There is no authorisation procedure for microbials.

Users are obliged to keep records on the use of pesticides for non-agricultural purposes.

3. Major risk reduction achievements over the last 10 years

Several activities were implemented in this area such as:

- Standardization of *application equipment* and technical verifications is mandatory. Plant protection machinery and equipment are included in the Register on the basis of a decision made by a duly authorised person whereby these have been approved. The Register is edited by the Control Institute. At least once a year a review of plant protection products or plant protection machinery and equipment, their manufacturers and holders of authorisation is published on the proposal of the Control Institute by the Ministry in the Journal of the Ministry of Agriculture of the Slovak Republic.
- As regards *labelling* of pesticides, users are supposed to read them, in this period plant protection products are re-classified according to Dangerous Preparation Directive No.1999/45/EC.
- *Qualifications and professional aptitude* are mandatory. Plant Protection Products may be placed on the market only by the persons who:
 - comply with the qualification requirements,

- comply with the requirements to get a certificate on aptitude to work with hazardous substances,
- have successfully passed a professional aptitude test.

The professional aptitude tests shall be conducted and applied for after finishing the professional courses dealing with the most recent knowledge in the fields of plant health care, legal regulations and guidelines issued by the Control Institute. Both courses and tests are conducted by the Slovak Phytopathological Society.

- These are official *advisory institutions* in the field of risk reduction : the National Reference Laboratory (NRL) of the University of Veterinary Medicine and Public Health Institute of the Slovak Republic, advisory service regarding plants health care (e.g. periodically signalization reports) and registration of pesticides is provided by the Central Controlling and Testing Institute in Agriculture (CCTIA).
- In early 2005, the Slovak Republic intends to create a *demonstration farm* to work with plant protection products containing paraquate as an active substance.

4. Least successful strategies which faced difficulties

On the Slovak level there is no harmonized procedure for registration and risk assessment of pesticides containing isomeric mixtures of active substance(s).

Part B: The Next Ten Years

5. Future Work

Elimination of *obsolete stocks* by 2006; Slovak Republic will be a party of Rotterdam Convention in 2005.

Cooperation among different ministries directly responsible for implementation of Basel and Stockholm Conventions should be enhanced. Risk mitigation measures for NATURA 2000 will be gradually introduced.

Part C: Optional

6. Miscellaneous/specific questions some countries/organizations wanted to ask other countries in the questionnaire

Aerial spraying

In Slovakia *aerial spraying* of authorised products is approved under the condition of their classification; their application shall be carried out after an agreement if obtained from the Health Institute, the National Referential Laboratory of the University of Veterinary Medicine, Research Institute of Animal Production and Water Research Institute.

Informing about changes to authorization

The holder of an authorisation shall notify to the Control Institute of *any change of the data* given in the application for authorisation and in the Decision on Authorisation as well as any new information on residues and their potentially harmful influence on human, animal or plant health and on the environment and if necessary, to apply for the re-verification and re-testing of the plant protection product.

Low risk pesticides

The use of “low-risk pesticides” without authorization is not permitted.

Is tank-mix application authorized?

Tank-mix applications are authorised.

***Systems for gathering information about poisoning
Pesticide Impacts on Vulnerable Groups***

The person(s) placing products on the market in the SR shall provide free of charge safety data sheets -to the Toxicological Information Centre (TIC) at the Professional Medicine and Toxicological Clinic in Bratislava. TIC gathers this information and provides on request this information to the hospitals and general public, TIC forms statistics also on pesticide poisoning incidents and impacts on vulnerable groups (e.g. children).

Contact persons:

Mr. Jaroslav Legáth
National Referential Laboratory of the University of Veterinary Medicine seated in Košice
e-mail: legath@uvm.sk

Mr. Hajaš Martin
Ministry of Agriculture
e-mail: martin.hajas@land.gov.sk

SLOVENIA

Part A: Evaluation of Pesticide Risk Reduction Efforts since 1994/5

1. Introduction of the policy framework/context for pesticide risk reduction

In Slovenia there is a long tradition of sustainable use of plant protection products. After independence of Slovenia (from the former Yugoslavia) the new law on Plant's health protection, which regulated plant protection products, too, was adopted in year 1994. The measures for risk reduction of plant protection products, laid down with this Law on Plant Protection Products, are the same as in the present law (valid since 2001, adapted in 2004), which is harmonised with directive 91/414/EC on plant protection products.

Beside the above mentioned law, following other instruments to lower the risks are in force:

1. *National Environmental protection programme* (since 1999), which is a complex program for environmental protection and gives particular attention also to whole life cycle of pesticides: e.g. clean production, safe use, appropriate storage and safe and controlled dumping and waste treatment.
2. *Law on environmental protection* (at the first time adopted in 1993, replaced with new, EU harmonised law in 2004): regulates monitoring (beside other substances) also of pesticides in environment (water, waste water, soil, air, wildlife and other living organisms in the environment), gives basis for restrictions of use of pesticides in particular vulnerable areas (e.g. water protection zones), and in areas where the "warning limits" in soils are exceeded.
3. *Law on chemicals* (first adopted in 1998, adapted in 2003): regulates the codecision of National chemicals bureau (NCB) in the Ministry of health in the process of putting on the market of plant protection products. Authorisation of PPP is the responsibility of Phytosanitary administration in the Ministry of agriculture, based on special law on Plant protection products. The NCB issues the agreement based on evaluation of plant protection product for people's health and environment. Evaluation must, beside common principles, take in consideration geographical, environmental and health characteristics of the Slovenian space as well as purposes and ways of application of particular plant protection products. Law on chemicals regulates also putting of biocides on the market and is in this domain completely harmonised with the Directive 98/8/EC on putting of biocide products on the market. This law, in addition to regulations under the environmental protection law, regulates monitoring of consequences of measures which have been taken to protect health and environment against adverse effects of chemicals (e.g. restriction on the market, prohibition), including pesticides.
4. *Law on foodstuffs* and materials which come in contact with foodstuff regulates residues of pesticides in foodstuffs and their monitoring in drinking water and foodstuffs.
5. *Stockholm (POPs convention)* and *Rotterdam convention (PIC convention)* have been ratified and National Implementation Programm on POPs is being prepared. Additionally, the EU Regulative on POPs and National rules on performing PIC procedure have been adopted.

6. *Law on agriculture* - the financial support on its basis is conditional upon the applicant's fulfilment of the prescribed environmental and health requirements on PPP.

There was no special strategy or risk reduction programme for pesticides worked out. However, the execution of the above mentioned law has brought some positive consequences for risk reduction. No *economic analyses* have been used in the evaluations, due to lack of accurate data, lack of methods, and lack of knowledge in this field. In the accession process to the EU, we were for our negotiation position interested to perform cost-benefit analyses for one particular product, for which we would like to have more restrictions than this was the case in EU, but we found out that no appropriate methodology existed there.

2. Modifications, new policies, strategies, goals or targets introduced since the first survey in 1994/5

The main goals of Slovenia's pesticides risk reduction policy are:

- pesticides-free foodstuffs and drinking water (consumer protection),
- safe use of pesticides (environment and worker protection, ground- and surface- water protection, e.g. protection of drinking water sources),
- nature protection (biodiversity).

The main (political) measures to reduce risks since 1994 up to now:

On the basis of PPP law

- Authorisation and registration of PPP completely harmonised with EU legislation Directive 91/414/EC (evaluation, risk assessment of PPP, etc);
- Classification, packaging and labelling completely harmonised with relevant EU legislation 67/543/EC as amended, and special Directive on (additional) labelling of PPP;
- Marketing of PPP is restricted to the legal and physical persons who fulfil the prescribed conditions on technical conditions (safe storage, sanitary conditions for worker protection, e.g. flowing water as well as other arrangements for clean air, protection clothes, etc.), and professional knowledge (in safe use, handling and intention of use of plant protection products), and are obliged to have responsible person for handout of PPP, keeping the records and reporting to the competent authority;
- Establishing and keeping records on quantity of purchased and sold PPP, as well as evidence of their stocks, and reporting these quantities to competent authority - obligation for those who put PPP on the market;
- Those, who use the PPP classified as T+ must report on quantities of used pesticides to competent authority;
- The majority of PPP could be only sold in specialized shops, only less harmful (without any classification group and in small packaging) could be sold in other sales such as florist's shops and in special departments of food shops;
- Appropriate use is also prescribed with law, there is a definition of such a use, which must be safe for environment, human and other beings, the use must be in accordance with good agriculture practice and in accordance with integrated plant protection, if appropriate, and must protect the non-target organisms;
- Aerial spraying is not allowed;

- Use of PPP on such a manner that the other non-agricultural areas, as well as areas where people or animals live would be contaminated, is strictly prohibited;
- Only registered PPP are allowed to be advised or advertised;
- Special attention is designed to honey bees;
- It is mandatory to obtain the certificate on knowledge on use and properties of PPP for all those who use PPP for commercial plant growing (all farmers who sell their products), at the end of 2003, 7847 users have obtained such a certificate, the number at the end of 2004 (the data is not available yet) would be much higher (probably has doubled);
- PPP classified T+ are not allowed to be sold for common use and in sales as other PPP. They are allowed to be sold only in legal and physical persons who possess special knowledge, including the knowledge on poisons, and who have permission for carrying out such activities;
- The sprayers for PPP have to be authorised prior to being placed on the market, and regularly controlled when they are in use; the spraying equipment testing had been voluntary organised through agricultural advisory service since early 1970th until 1994, when testing became obligatory;
- Residues of PPP (waste) and their package are treated as dangerous, if they are classified as such and is mandatory to treat them separate from other waste, according to law on waste handling.

There are two additional measures, which will come in force at 1 January 2006:

- a) Plant Protection Products, which are allowed to be sold only in specialised shops, what is written on the label, will be sold only to those users, who will have a certificate on knowledge on PPP; and
- b) Users will be obliged to keep evidence on use of PPP.

In this regard the PPP users who are not registered as market producers, they will be allowed to buy certain PPP only. For such PPP will be used special criteria: volume/amount of packaging, proposed use and properties of preparation (classification). Volume/amount of packaging: proposal of the Commission for the registration of PPPs up to 0.2 L / 0.2 kg. It will be determined which PPPs can be used by those users who are not registered market producers. Until year 2006 all of the market producers of PPPs should perform the exam from phytomedicine – based on these licenses they could buy the PPPs.

Programs on the basis of law on agriculture, environmental protection law, and others

Regulations on special financial supports (subsidies) of agriculture include among other conditions, fulfilling of all relevant prescribed conditions in law on plant protection (certificate on knowledge, certificate of spraying equipment, etc.).

Special financial support is given to:

- areas with limited possibility,
- ecological farming,
- integrated arable farming,
- integrated fruit growing,
- integrated vine growing,

- integrated vegetable growing.

For more information about subsidies mentioned above, the following page should be consulted, unfortunately only in Slovenian:

http://www.gov.si/mkgp/slo/sektor_sonar_kmet_oddprogrrazvpod_SKOP.php

3. Major risk reduction achievements over the last 10 years

The mayor risk reduction achievements are: constantly diminishing presence of residues of pesticides in drinking water and water sources, as well as in foodstuffs and environment. The reasons behind the success were complexity of work which have been done and is being done:

- close cooperation of three government bodies, that are ministries of Health, Environment, Agriculture,
- preventive measures such as: wide spreading of information and knowledge through Agricultural advisory service (training, education, demonstration.), introduction of integrated pest management, close collaboration with science (each two years international symposium on plant protection in Slovenia, where all agricultural advisors and inspectors are invited to participate either actively or passively),
- enforcement measures, and punishment - regulatory prohibition of some substances, strict supervision through agricultural, health and ecological inspection,
- integration in the relevant law of above mentioned provisions as conditions for application for financial support.

The stakeholders, including environmental NGOs were (are) involved through extensive discussion on different forums, in the process of preparation of the National environmental programme, preparation of law and other measures, different discussions in the Parliament in National Assembly (Globe Slovenia) as well as in the National Council in the Parliament.

4. Least successful strategies which faced difficulties

We have not yet prepared and adopted a special programme on pesticides risk reduction. Reasons behind that are a shortage on man power due to various factors such as preparation for inclusion in the EU and the creation of new state after independence.

Part B: The Next Ten Years

5. Future Work

At national level: Finalisation of National Program on Chemical Safety, which will cover also PPP risk reduction and its adoption in the National Assembly.

At international level: Close cooperation in SAICM process among all stakeholders is necessary also for safe management of pesticides. Integration of OECD achievements in the domain of pesticides to concrete measures of SAICM document would be appreciated. OECD can perform "soft pressure" to the countries with such a questionnaire. One of the very useful means would be the development of guidelines (methodology) for performing cost-benefit analyses.

Part C: Optional

6. Miscellaneous/specific questions some countries/organisations wanted to ask other countries in the questionnaire

Is aerial spraying authorised? If so under what conditions?

It is not allowed.

How are the problems of private/amateur use being addressed?

Beyond 1 Jan 2006 they will not be allowed to buy the products, which are classified and sold in specialised sales (only if they will have a certificate of knowledge).

How is the effectiveness of communication and information provision ensured?

They are informed through Official Journal, web site, Agricultural advisory service (350 advisors on the territory of Slovenia), national and regional institutions, and other means, such as national and local radio (each day's emissions, TV, special newspaper, magazines).

Is the use of "low-risk pesticides" permitted without registration?

No.

Is tank-mix application authorised?

No.

Are pre- and post-treatment activities (i.e. mixing, cleaning) specifically addressed and how?

Yes, they are addressed in the conditions for applying for financial support (it is prescribed and the applicant has to sign, that the necessary measures regarding use of PPP will be carried out, that they will respect all recommendations regarding safe storage, safe transport, safe preparation of tank mixture, safe handling with unclean spraying equipment, appropriate handling with PPP residues, and packaging, etc.)

Contact person:

Dr. Marta Ciraj

SWEDEN

Part A: Evaluation of Pesticide Risk Reduction Efforts since 1994/5

1. Introduction of the policy framework/context for pesticide risk reduction

National risk reduction programmes on pesticides have been in force since 1987 in Sweden. Up to now, three stages covering 5 years each have been completed and a new 5 year long programme has recently been proposed to the Government. Responsible agencies are the Swedish Board of Agriculture and the National Chemicals Inspectorate. The programmes have been performed in consultation with the Swedish Environmental Protection Agency, the National Food Administration and the Swedish Work Environment Authority.

Targets and results

Period	Targets (compared to the base period 1981-85)	Results
1987-1990	Target: 50 % use reduction	49 % use reduction achieved.
1991-1996	Target: 75 % use reduction	64 % use reduction achieved.
1997-2001	No use target, but further reduction in risks expressed by indicators	Based on environmental and human health risk indicators the reduction was 63% and 77% respectively (year 2000).
2002-2006	No use target, but further reduction in risks expressed by new indicators	Mid-term results at www.kemi.se

In the first two stages of the Swedish risk reduction programme on agricultural pesticides, the following measures were included:

- changeover to pesticides and authorisation provisions which implies less risks,
- safer handling of pesticides, improvement of regulation, training and information activities,
- reduced use of pesticides.

The latter was expressed in each stage; as to reduce by half the quantity of active substances used over the period covered, 1986-1990 and 1991-1996 respectively. Accordingly, the two-fold halving added up in a goal of 75 percent reduction in 1996 compared with the average use during 1981-85. However, this goal was not possible to achieve. In 1996 the reduction in sold quantities was 64 percent.

Risk indicators

The national Pesticide Risk Indicators (PRI) used during the period 1997-2001 has been refined to better reflect risk trends.

Old PRI	New PRI
Based on (for each active substance): <ul style="list-style-type: none"> • sold quantity • current hazard classification (including also persistence, bioaccumulation and mobility properties) 	Based on (for each active substance): <ul style="list-style-type: none"> • the theoretically maximum number of hectare doses • current hazard classification (including also persistence, bioaccumulation and mobility properties) • exposure related factors such as formulation type, application method and treatment frequency
Two types of indicators; one related to environmental risks and one to human health risks.	Two types of indicators; one related to environmental risks and one to human health risks.
Has been in use since 1997	Will replace the old PRI from 2003 and onwards.

Methodology and annual results of the new PRI can be found at www.kemi.se.

Another indicator to be used at farm level has also been developed. The aim is to use a more realistic approach by defining local exposure conditions. Another important aspect is that by using these tools, farmers can check their own progress in relation to risk reduction. On a long term, the intention is to aggregate results from the farm level so it also can be used to express risk trends at the national level.

No economic analyses have so far been conducted for any of the measures in the programme.

2. Modifications, new policies, strategies, goals or targets introduced since the first survey in 1994/5

In the third stage of the programme, no quantitative goal targeting on further use reductions was proposed. Instead, *risk indicators* were used to follow up progress. These indicators have recently been refined to measure progress of the ongoing fourth stage of the programme, see section above.

The programme objective has been to reduce pesticide risk resulting from professional use in agriculture and horticulture. Forestry, home garden, industrial and amenity uses have not been included in the programme.

3. Major risk reduction achievements over the last 10 years

a) Examples of key elements

Pesticide regulation

- Extensive review of all existing pesticides between 1990 and 1994.

- The use of comparative assessments, the precautionary principle and decision-making criteria² to facilitate prompt and easy authorisation procedures. About 80 out of 180 existing active substances were removed from the market during the national review period.
- Phase-out activities on certain unacceptable pesticides considered to be indispensable.
- A new regulation on the handling of pesticides came into force in 1997.

Additional instruments and activities

- Mandatory training. A four-day long training course is required for all farmers using pesticides professionally.
- Advisory service focusing on integrated and need-based crop protection. Examples of areas covered are:
 - pest forecasting and warning services
 - demonstration trials (for example on unsprayed edge zones) and field courses
 - information on possibilities to reduce the dose rates.
- Research and development on need based crop protection, organic farming, spraying techniques etc.
- Programme for voluntary testing of spraying equipment.
- Voluntary information campaign “Safe Pesticide Use” launched by the Federation of Swedish Farmers in a jointly collaboration with the Crop Protection Industry, the Board of Agriculture, the Chemicals Inspectorate, and the Environmental Protection Agency.
- Monitoring programmes on pesticide residues in food and water.
- Environmental levy (30 SEK per kg active substance).

b) Experiences reached

Important factors that have contributed to the success of the Swedish risk reduction programme on pesticides are;

- Integration of and balance between mandatory and voluntary elements,
- A variety of additional activities performed at different levels (local to national) and driven by different stakeholders (farmers, authorities, research institutions),
- Full support on the programme from the Federation of Swedish Farmers (80 % of the farmers are members of FSF),
- A close and encouraging contact between authorities under the Ministry of Agriculture and the Ministry of Environment. The mission to develop the programme was given as a shared task to the Swedish Board of Agriculture and the National Chemicals Inspectorate.

² Andersson L *et al.* (1992), “Principles for Identifying Unacceptable Pesticides”, The Swedish National Chemicals Inspectorate, KEMI Report No 4/92.

4. Least successful strategies which faced difficulties

Circumstances interfering with the programme objectives

- A high dependency on pesticides still remains in food production.
- The fully harmonised EU legislation on pesticides (Directive 91/414/EEC) is setting barriers for individual member state programmes aiming at a reduction in chemical dependency by regulatory means.
- It is not possible to involve all farmers. Some farmers are not open for information on risk reduction possibilities and they are not prepared to change their manner.

Part B: The Next Ten Years

5. Future Work

The ongoing fourth stage of the programme

The overall aim with the proposed fourth stage of the programme (2002-2006) is to continue the successful activities already implemented. More focus will be given to a number of selected use areas, which require particular attention. Several of these concern the contamination of *surface water and groundwater*.

- Mixing, loading and cleaning of the spraying equipment.
- Spraying in vulnerable areas.
- Weed control in sandy soils and in row sown crops.
- Late autumn and early spring (spring crop) applications.

More attention will also be given to pesticide risks in *the horticultural sector* compared to the earlier stages.

- Frequent applications in strawberries, apples and potatoes.
- Air blast spraying technique in fruit orchards.
- Direct or indirect exposure to (re-entry) workers from treated plants in glasshouse production.

Grower associations are prepared to take a more active part in the programme, for instance by defining a *national standard for Good Plant Protection Practice*. A programme for *mandatory testing of spraying equipment* will also be proposed.

Part C: Optional

6. Miscellaneous/specific questions some countries/organizations wanted to ask other countries in the questionnaire

Aerial spraying

Aerial spraying is generally forbidden but derogations are possible. Two derogations have been granted for plant protection purposes (application in forests) during the latest 20 years.

How are the problems of private/amateur use being addressed?

Only a few substances are approved for plant protection purposes to be used by amateurs. These are assigned to class 3. Class 1 and 2 products are only allowed to be used by professionals carrying a particular license.

Informing about changes to authorization

Information can be found at the web site <http://www.kemi.se/bkmregoff/default.cfm>.

Low risk pesticides

Products acting only by physical means, such as soap, are exempted from the requirement of approval.

Is tank-mix application authorized?

No, there is no requirement for approval of tank-mix.

Are pre- and post-treatment activities (i.e. mixing, cleaning) specifically addressed and how?

Pre- and post-treatment activities are addressed in a particular regulation (SNFS 1997:2) and there is also an information campaign (Safe Pesticide Use) focusing on these activities.

Contacts:

Else-Marie Mejersjö
Swedish Board of Agriculture
S-551 82 Jönköping
Sweden
tel: +4636-15 51 67
e-mail: else-marie.mejersjo@sjv.se

Peter Bergkvist
National Chemicals Inspectorate
P.O. Box 1384
S-171 27 Solna
Sweden
tel: +468-519 412 09
e-mail: peter.bergkvist@kemi.se

SWITZERLAND

Part A: Evaluation of Pesticide Risk Reduction Efforts since 1994/5

1. Introduction of the policy framework/context for pesticide risk reduction

A Survey in the watershed area of the lake of Greifensee, a lake in the Zurich region, investigates the exploitation of land and landscape by agriculture and forestry and the possible utilisation conflicts, which could arise with other parties using these resources. The project develops concepts for sustainable primary production, which should be promoted by a re-orientation of environmental and agricultural policies (<http://www.ito.umnw.ethz.ch/SoilPhys/greifensee>). It is not an ex ante/ex post evaluation. The project started in spring 2000 and will run for five years. It aims to develop a resource-efficient, socially compatible, ecological and economic form of land and landscape utilisation. This in turn leads to the main objective, which is the elaboration of scientific principles for future structuring and regulation of sustainable agricultural and forestry production processes in the Swiss Midlands and the respective policy measures for their implementation

2. Modifications, new policies, strategies, goals or targets introduced since the first survey in 1994/5

With the proposed amendment to the Law relating to the Protection of the Environment (LPE) of 7 June 1993, the Swiss Federal Council proposed in a can formulation the introduction of *incentive taxes* on mineral fertilisers and surplus farm manure - both because of their environmentally relevant N [nitrogen] and P [phosphorus] content -, and on plant protection products (PPPs). Parliament did not want incentive taxes on stocks, but acknowledged the Federal Council's request in the form of a motion (Motion 94.3005 of the Committee for Environment, Regional Planning and Energy of the Council of States, CERPE-S).

Wording of the motion of 27 January 1994:

"The Federal Council is charged with laying before parliament within five years a bill on the introduction of incentive taxes on mineral fertilisers, surplus manure and plant protection products, should the recently introduced environmental and agricultural policy instruments for environmentally compatible management of agriculture fail to have the intended effect. Otherwise the Federal Council shall report to the parliament that the instruments already introduced have achieved the intended effect."

The motion requires a presentation of the effects, which have been achieved by means of the agricultural instruments for environmentally friendly management of agriculture (newly introduced legislation for agriculture).

The Federal Council has published a report that summarizes and assesses the currently available data for responding to the motion. The report is available in German (Bericht des Bundesrats), French (Rapport du Conseil fédéral) and Italian (Rapporto del Consiglio federale). An English version will be available soon (end of 2004).

The Federal Council concludes that the environmental policy and agri-ecological instruments currently available should essentially be appropriate for reducing the risk associated with the use of plant protection products. However, the available data do not permit a conclusive evaluation of the policies. The decision-making bases for estimating the environmental pollution load and the risks will be improved by means of an appropriate action programme.

With the action programme data on the application of PPPs are to be collected in a representative and transparent way, in order to be able to make a reliable assessment of the effect of environmental and agricultural policy measures. The risk associated with these applications will be determined using appropriate indicators, which are based on relevant regional or local monitoring. The results will also serve as a basis for targeted monitoring of environmental pollution from PPPs and for advice regarding targeted selection and application of PPPs. Targets for reducing the environmental risks from PPPs will be set jointly by Swiss Agency for the Environment, Forests and Landscape (SAEFL) and the Federal Office of Agriculture (OAGR) in collaboration with interested and affected parties.

3. Major risk reduction achievements over the last 10 years

Besides the points mentioned above (under "section 1 and 2") the *requirements for the registration* were significantly raised and the competence of the experts to evaluate the data was improved. There were also significant improvements regarding the application techniques, the applied amounts of products (especially in orchards) mainly due to the *standardisation of application procedures* as a consequence of information and extension by our advisory services. Additionally it has to be noticed, that in Switzerland every farmer who intends to use pesticides has to attend a *mandatory professional/specialized training* finally attested by a permit.

Already mentioned above (under "section 2") the environmentally friendly management of agriculture has become more and more important, i.e. the *percentage of ecologically/biologically farming* has significantly increased.

4. Least successful strategies which faced difficulties

One problem arises when evaluating new active substances according to the new valid guidelines. Such a new compound may not be successful to be listed in Annex I, even where it presents a significantly lower risk (e.g. regarding ecotoxicology) than an older - not yet re-evaluated - compound, which is still on the market.

Part B: The Next Ten Years

5. Future Work

National agenda

In 2005 a new ordinance concerning "the placing of plant protection on the market" will become effective. It will *fully adapt the EU requirements* with respect to the submitted dossier as well as the decision criteria. With it there will also start a *re-registration procedure* analogous and harmonized to that in the EU.

Also the recently started special evaluation program concerning the environmental behaviour of (already registered) pesticides in areas of drinking water collection will achieve to risk reduction.

Areas for international collaboration

A good opportunity for international collaboration is *work sharing/-saving programs*. This leads to lower the workload of individual countries and simultaneously to more harmonized and improved evaluations.

Part C: Optional**6. Miscellaneous/specific questions some countries/organizations wanted to ask other countries in the questionnaire*****Aerial spraying***

Yes, aerial spraying needs a special authorisation. It mainly occurs in steeply placed vineyards, where fungicides were applied. But especially the ecotoxicological risk will be evaluated in advance.

How are the problems of private/amateur use being addressed?

In general, it is not separately considered. There are only a very few products whose use is not/or is exclusively permitted in house gardens.

How is the effectiveness of communication and information provision ensured?

The regulated community will be informed in different ways, depending on the change/modification. "Smaller" changes may be communicated e.g. through the advisory services. Whereas significant changes, such as the ban of a product, will besides public information (newspaper, etc.) directly be communicated by a letter to all companies (stakeholders), regional authorities and farmer associations, etc.

Is the use of "low risk pesticides" permitted without registration?

No, it is not. Our understanding is, you have to evaluate a dossier, i.e. at least some basic studies in different areas, to be able to decide if it is a "low-risk pesticide". The requirements written in the Council Directive 91/414/EEC (corresponding to our new ordinance) allow the applicant to omit studies, if he supplies supporting arguments.

Is tank-mix application authorized?

Tank-mix is authorized only in cases where a defined mixing partner is needed (generally defined by the applicant) and/or a reduced application rate is recommended together with another pesticide.

Are pre- and post-treatment activities (i.e. mixing, cleaning) specifically addressed and how?

Instructions for cleaning have to be mentioned on the label.

Contact Person:

UK

Part A: Evaluation of Pesticide Risk Reduction Efforts since 1994/5

1. Introduction of the policy framework/context for pesticide risk reduction

In Great Britain the systems for regulating pesticides have evolved progressively since the 1940s. They involve various government departments and agencies, the independent Advisory Committee on Pesticides and now also committees and agencies within the European Union. The controls on pesticides were put on a statutory basis in 1986 with the introduction of the Control of Pesticide Regulations 1986 made under Part III of the Food and Environment Protection Act 1985. The legislation gives Ministers broad powers to protect the health of people, creatures and plants, to safeguard the environment, to secure safe, efficient and humane methods of controlling pests and to make publicly available information about pesticides. In particular, the advertisement, sale, supply, storage or use of pesticides is prohibited unless Ministers have approved them.

The most significant development in the UK approvals system for plant protection products since 1994/5 has been the gradual replacement of the domestic legislation by EC arrangements covered by EC Directive 91/414/EEC. The standards set by this EC legislation in terms of protection of people and the environment are very much in line with the existing UK arrangements. The EC legislation provides that pesticides should be evaluated at a Community level while products containing those pesticides should be authorised by Member States.

EC Directive 91/414/EEC was implemented in Great Britain by the Plant Protection Products Regulations 1995. Similar legislation applies in Northern Ireland. For England and Wales the 1995 regulations have recently been replaced by the Plant Protection Products Regulations 2003. The Directive also provides for the review of plant protection products already on the Community market to ensure that they meet modern standards of safety and efficacy. To date approximately 70 active substances out of the 350 that have UK approvals have been taken off the market. Within the EU as a whole, approximately 450 out of 970 active substances have been withdrawn.

Pesticide usage surveys for all agricultural and horticultural crops are conducted throughout Great Britain on a regular basis. Surveys of pesticides used on arable crops are conducted every other year and on the majority of other crops every four years. They are designed to provide information which is representative of the national pattern of crop production and the use of pesticides. This is achieved by using a balanced statistical sample for each survey to ensure that an appropriate cross-section of growers is targeted. The data gathered is principally used to inform the regulatory evaluations but is also used by Government Departments to inform and support a range of policies in relation to pesticides and the environment.

There are a number of existing *indicators*, from the Pesticides Forum, the Voluntary Initiative for Pesticides and others, that reflect the impact of Government and industry efforts to reduce the adverse environmental impacts of pesticide use. Details of these are given in the tables below:

Pesticides Forum Indicator	Description
1. agronomic indicator	pesticide usage information (area sprayed, active substance applied, average dose rates) accompanied by measures of: Crop areas; drilling dates; weed, pest and disease risk and timing of pesticide applications
2. pesticides in surface water indicator	pesticide concentrations in surface waters
3. aquatic pollution indicator	use of Environment agency data on substantiated pollution incidents involving crop protection products
4. aquatic risk indicator	use of Central Science Laboratory's aquatic risk indicator as a measure of pesticide risk to the aquatic environment
5. terrestrial wildlife population trends indicator	use of population information on the Grey Partridge and Corn Bunting
6. impacts on terrestrial wildlife indicator	Wildlife Incident Investigation Scheme data on vertebrate related incidents
7. cereal field margins indicator	use of data on the adoption of Cereal Field Margins (in England)
8. operator and human exposure	use of data set collected by Health and Safety Executive (HSE) field officers and reviewed by the Pesticides Incidents Appraisal Panel (PIAP)
9. residues in food indicator	use of maximum residue level data available from the Pesticide Residues Committee

Voluntary Initiative Indicator	Voluntary Initiative Final Target (by 1 April 2006 unless otherwise stated)
1. Frequency of detection of individual pesticide in untreated surface water at levels above 0.5 and 0.1 parts per billion	30% reduction in detection levels above 0.1 ppb by 2006
2. Trends in the top ten agricultural and amenity pesticides in untreated surface water at levels above 0.1 parts per billion	30% reduction in detection levels above 0.1 ppb by 2006
3. Achievement of local catchment targets	Target set by catchment but all catchments to show a downward trend by January 2004
4. Reduction of aquatic risk	Current trend to reduce aquatic risk from crop protection products maintained and increased
5. Substantiated pollution incidents (relating to the use of agricultural pesticides)	To maintain and if possible reduce the current very low levels
6. Area of cereal field margins (of value to biodiversity)	Support Government target to maintain, improve and restore by management the biodiversity of 15,000 ha of cereal field margins of suitable soil types by 2010
7. Terrestrial wildlife population trends for grey partridge	Support Government target of halting decline by 2005 and ensuring the population is above 150,000 pairs by 2010
8. Terrestrial wildlife population trends for corn bunting	Support Government's long-term target to increase numbers to at least 50% of 1996 numbers and expand the birds' range by 2008

9. Number of agronomists who have undertaken a recognised additional environmental training/qualification (BETA)	750
10. Number and land area of farmers who have obtained the new Farm Environmental Management – Crop Protection certificate	50% (estimate 1250) of all eligible farmer decision-makers trained and registered
11. Number of products with Environmental Information Sheets published	All professional products marketed by CPA members
12. Percentage of sprayed area under Crop Protection Management Plans	30% (1,200,000 ha) of all sprayed farm land
13. Number and percentage of operators on the National Register of Sprayer Operators	All operators on farms with more than 100 ha of arable cropping by April 2005 (17,885, about 75%)
14. Number of half day Operator Roadshow events	530
15. Number of product labels amended in line with CPA guidance on clarity	All professional pesticides marketed by CPA members by April 2005
16. Percentage of active agronomists on Professional Register	100% compliance by former CPA distributor members by end 2003
17. Number and percentage of eligible sprayers with independent sprayer tests	All sprayers with more than 50 ha of arable cropping (estimated 20,900)
18. Adoption of key improved practices following analysis of Farm Application Survey Results	50% of arable area to show measures taken to improve pesticide handling facilities and drift management practices by end 2004

Between 1994 and 1998 there was a rolling programme for *economic policy evaluations* which included pesticides. From 2000 policy evaluation came under the ‘Modernising Government’ Initiative. Basically under both these schemes pesticides policy was considered to be constantly under review because of the constant state of development of the UK (and later EU) regulatory systems. As such it has not been considered necessary to undertake a separate formal appraisal/reappraisal of the regulatory system.

Additional information about the regulation of pesticides and risk reduction activities in the UK which you may also find useful for the purposes of this survey is to be found on the Pesticide Safety Directorate’s website: www.pesticides.gov.uk and the Voluntary Initiative website: <http://www.voluntaryinitiative.org.uk/Content/default.asp>.

2. Modifications, new policies, strategies, goals or targets introduced since the first survey in 1994/5

It is established Government policy to minimise the risks from pesticides to consumers, pesticide users and the environment bringing them below even those set by the rigorous approvals process. This is pursued in a number of ways including a statutory *Code of Practice on Pesticide Use* (revised this year), and a wide-ranging research programme aimed at *minimising pesticide use through biological rather than chemical controls* and improved targeting of pesticides. The domestic industry has generally given support to the policy.

Integrated Crop Management is an important means of promoting the responsible use of pesticides in the UK. It is a ‘whole-farm’ philosophy, combining the best of conventional farming practices with cultural methods of pest control such as rotations. Integrated Crop Management seeks to minimise reliance on inputs such as pesticides and fertilisers and such techniques are practised on many UK farms. The promotion of Integrated Crop Management is also at the centre of the National Farmers Union/Retailers

“Assured Produce” schemes which seeks to ensure that UK produce supplied to supermarkets is produced to Integrated Crop Management standards.

The Pesticides Forum was established in 1997 to encourage initiatives, taken collectively or individually by its constituent organisations, to promote responsible pesticide use. The Forum’s membership comprises a wide range of farming, agrochemical, consumer and environmental interests and aims in particular to promote integrated farming techniques, which place less reliance on pesticide use. The Forum has produced a Framework of Objectives for the responsible use of pesticides in order to help farmers and growers throughout the UK to make informed and responsible decisions on the use of pesticides.

Stewardship schemes are also operated by the producers of crop protection products and are another way in which the responsible use of pesticides is encouraged thereby providing an effective alternative or supplement to regulatory activity. For example, the industry stewardship scheme for the widely used cereal herbicide, isoproturon, aims to support regulatory action to limit levels of the pesticide in water.

The Crop Protection Association together with the National Farmers Union and a number of other interested bodies put forward a package of voluntary measures as an alternative to a pesticides tax in April 2000. *The Voluntary Initiative on pesticides* is scheduled to run for five years from April 2001 and the Government has taken the view that, provided the Initiative is fully implemented, it should be the most effective way of reducing the environmental impacts of pesticides. Although it is too early to tell whether the Initiative as a whole will be a success it is already clear at this stage that the Initiative has created and rolled out several schemes that will be very valuable in helping to ensure good practice in the use of pesticides. In particular the Initiative has assured good farmer ‘buy-in’ having persuaded the various farm assurance schemes covering arable and horticultural crops to support key parts of the Initiative. The result has been that good practice has been introduced in a systematic and verifiable way to large numbers of pesticide users. This result would have been difficult and costly to achieve through Government intervention. The Initiative is due to come to an end in 2006. A final evaluation of its success across the UK will be made at that time. The purpose of this evaluation will be first to determine how far a voluntary approach has been successful in reducing the environmental impact of pesticides and hence to weigh up which further actions are needed beyond 2006.

3. Major risk reduction achievements over the last 10 years

Legislation accompanied by monitoring and enforcement arrangements is already used in the UK to set the baseline standards for the marketing and use of pesticides. This approach can be very effective but does not give maximum scope for innovative ways to reach desired outcomes. Legislation is often unpopular and, unless EU wide, can disadvantage UK businesses.

Since 1994/95 there has been a gradual transition from the UK to the EU regulatory systems for regulating pesticides and plant protection products. The single most important mechanism for achieving risk reduction has probably been the review programme for evaluating older pesticides to modern safety standards. Such reviews were initially undertaken under the UK’s own review programme which was later subsumed into the harmonized EU review process. However there have been other initiatives. The continuing development of the pre-approvals system for pesticides has also played a significant role by ensuring that new pesticides coming to the market meet ever increasing and exacting safety standards.

A *voluntary approach* can have the benefits of being less bureaucratic, less costly to administer and more flexible. It can generate ‘ownership’ of initiatives. However against this it needs to be recognised that uptake could be low without any element of compulsion. In particular, a voluntary approach may find it

hardest to reach precisely those people whose behaviours most need to be changed for the initiative to succeed. There is, of course, no way of enforcing the desired outcome.

Although it is still too early to tell whether the Voluntary Initiative for Pesticides as a whole will be a success it has already created and rolled out several schemes that will be very valuable in helping to ensure good practice in the use of pesticides. Furthermore these are schemes that it would have been very difficult for Government to arrange and fund.

With regard to *stakeholder involvement* it is the policy of the Pesticides Safety Directorate to consult all stakeholders on all significant policy initiatives be that voluntary or mandatory. There are numerous ways in which stakeholders are consulted but perhaps the most common approach for important issues is by means of formal public consultation exercises. Such consultations last a minimum of 3 months and unless they request otherwise the replies from all correspondents are made available for public inspection following the publication of a summary of the consultees' views and the government's response to them.

4. Least successful strategies which faced difficulties

One of the most common complaints about pesticides is the *complexity of pesticide product labels*. The argument is often made that these labels try to convey too much complex information. One reason for this is the range of statutory labeling requirements required for such products under general chemicals (as well as pesticides) legislation. In an effort to achieve a degree of clarity, and to reduce regulatory burden, the Pesticides Safety Directorate has held 'labelling workshops' and recently undertaken a review of labeling and introduced simplified requirements. Details of these are to be found on the Agency's website <http://www.pesticides.gov.uk>

Another area that has been problematic is the *disposal of unwanted pesticides* (including home garden products) and *waste pesticide containers*. A number of initiatives have been looked at to address these issues including close transfer systems; a voluntary national pesticides retrieval scheme; industry produced best practice guidance; and for pesticides for use in domestic gardens that have lost their approval as a result of the EU review, an industry initiative to take back unsold stock from retailers.

Part B: The Next Ten Years

5. Future Work

Perhaps the most significant future development in respect of risk reduction in the UK is the *development of a Strategy for the Sustainable Use of Plant protection Products*. Despite the many benefits plant protection products bring to growers and consumers alike their use can also have harmful effects on the environment. One way of reducing these harmful effects is by developing and encouraging the sustainable use of plant protection products, i.e. minimising the hazards and risks to the environment from the use of plant protection products without putting necessary crop protection at risk.

To this end the UK government has, for many years, operated a policy of pesticide 'minimisation'. Producing a strategy for the sustainable use of plant protection products is the latest advance in this policy. As well as being useful in its own right, there have been two recent developments that have encouraged the Pesticides safety Directorate to produce a strategy to develop and advance sustainable use. These are the EU's own planned thematic strategy on the sustainable use of pesticides and the Environmental Audit Committee's recommendation of a pesticide strategy to show *how different policy instruments could combine* to reduce the environmental impacts of pesticides.

The Pesticides safety Directorate is currently preparing a draft strategy which, if minister are content, will be put out to public consultation early next year. It is intended that the national strategy will be UK

wide and cover all uses of plant protection products in agriculture, *horticulture* (fruit and vegetables), *floriculture*, in *domestic gardens*, on *railways, roads and runways*, in the *leisure industry*, and in *amenity areas* such as parks and playing fields. It is proposed that the strategy will include:

- information on the legal controls on pesticides and plant protection products in the United Kingdom;
- an explanation of other measures that influence how plant protection products are used;
- draft ‘action plans’ that should contribute to sustainable plant protection use; and
- proposed use of existing Pesticide Forum and Voluntary Initiative targets and indicators to measure the strategy’s success.

Part C: Optional

6. Miscellaneous/specific questions some countries/organizations wanted to ask other countries in the questionnaire

Aerial spraying

Aerial spraying is permitted subject to the products themselves having approval for such use and provided spraying is undertaken in accordance with Schedule 4 of the Control of Pesticides Regulations 1986 (as amended) – Conditions Relating to the Use of Pesticides by Aerial Application. These Conditions stipulate the certification required by the spray operator, the requirement to consult with various environmental bodies, the requirement to notify of spray operations and the requirement to keep records. In addition the UK government keeps annual usage figures of the aerial application of pesticides.

How are the problems of private/amateur use being addressed?

Pesticide products are only approved for use by the general public in the home or home garden where they offer a minimal potential risk. This is basically addressed by only approving low toxicity pesticides, diluted ready-to-use products, imposing package size restrictions and the requirement that the approved use(s) of the products should not require any special protective clothing. This policy was last reviewed by UK ministers in 1995 when it was agreed that the approval criteria should remain unchanged. In addition advice and guidance on good practice for using and disposing of such products has been published by both government and the agrochemicals industry.

How is the effectiveness of communication and information provision ensured?

The Pesticides Safety Directorate, and others involved with pesticide regulation in the UK, use a wide variety on communication methods. The Pesticides Safety Directorate has a long established policy of consulting stakeholders in regulatory matters and issues a series of regulatory updates to keep interested parties informed. The agency has also recently re-launched its website and actively monitors the number of people who visit the site. The Directorate also undertakes regular customer satisfaction surveys of its stakeholders which covers a range of issues including communication.

Is the use of “low-risk pesticides” permitted without registration?

No. The same high regulatory standards of safety and efficacy are applied to all pesticides that fall within the scope of the pesticides regulations. Nevertheless the Pesticides safety Directorate does interpret the regulatory guidelines in a flexible way (without compromising safety) and it is open to any applicant for pesticide approval to present a case as to why a particular test or condition may not be applied in relation to their specific product.

Is tank-mix application authorised?

Requirements in respect of tank mixing are laid down Schedule 3 of the Control of Pesticides Regulations 1986 (as amended) – Conditions Relating to Consent to the Use of Pesticides. These Conditions, amongst other things, stipulate that:

- pesticides may only be mixed with other pesticides where their approvals allow this;
- only ‘authorised’ adjuvants may be used with a pesticide; and
- two or more anticholinesterase pesticides may only be mixed where the approvals expressly permit this.

Are pre- and post-treatment activities (i.e. mixing, cleaning) specifically addressed and how?

Farmers and growers are required by law to take all reasonable precautions when using pesticides to protect people and the environment. Advice to farmers and growers on how to meet their responsibilities under the pesticides legislation, including pre- and post- treatment activities such as mixing and cleaning, is given in the statutory Code of Practice for the Safe Use of Pesticides on Farms and Holdings (the “Green Code”). The Green Code includes specific advice to users to carry out suitable and sufficient assessments of the risk to health and the environment from the use of a pesticide before work starts. Users are directed to consider whether anybody might be at risk from exposure, to assess the potential for spray drift taking account of the application methods and weather conditions, and are advised to give prior notice to occupiers of land or premises nearby. The Code has recently been revised and may be found on the Pesticide Safety Directive’s website <http://www.pesticides.gov.uk>

What are the systems in place for gathering information on pesticide poisoning incidents?

Incidents of poisoning involving operators and the public are investigated by the Health and Safety Executive. Their Pesticide Incidents Appraisal Panel (PIAP) was established to consider all investigated incidents where the use of a pesticide at work may have affected the health of the user or someone nearby. The Panel is chaired by a doctor from HSE’s Health Directorate. It consists of representatives from HSE’s Field Operations Directorate (including the Employment Medical Advisory Service), a Department of Health toxicologist, and external specialists from the National Poisons Information Service.

The Panel assesses documentary evidence compiled from investigations by HSE and local authorities into cases of alleged pesticide related illness. It provides an overview of these cases in order to inform the pesticides approvals process. The Panel may also have the results of any examinations or investigations carried out by the National Health Service and others involved in the care of individuals. Each case is carefully considered on the basis of the investigation reports and the known or suspected adverse effects of the chemicals involved.

What are the systems in place for gathering information on pesticide impacts on vulnerable groups?

Account of vulnerable groups is taken into account in the UK’s pesticides regulatory system. The toxicity data package evaluated before a pesticide is approved is comprehensive to enable us to determine the shorter-term and longer-term toxicity of a pesticide and to consider possible reproductive and developmental toxicity. This enables the risk assessment to fully take into account the possible impact on different development groups. For instance, account is taken of the fact that children and infants eat relatively more of certain foods (e.g. yoghurts, soft citrus fruits like satsumas). Account is also taken of the fact that because they are physically smaller, their intake of residues will be relatively higher.

Contact Person:

US

Part A: Evaluation of Pesticide Risk Reduction Efforts since 1994/5

1. Introduction of the policy framework/context for pesticide risk reduction

Voluntary pesticide risk reduction activities within the Office of Pesticide programs are guided by EPA's strategic plan that was developed in the response to the Government Performance Reporting Act (GPRA). GPRA requires all Government Agencies to set performance standards and to develop a strategic plan to reach those standards. Goal 4 of EPA's Strategic Plan calls for "Preventing Pollution and Reducing Risk in Communities, Homes, Workplaces, and Ecosystems. More specifically, objective 4.1 of the EPA Plan calls for the prevention and reduction of pesticide, chemical and genetically engineered biological organism risks to humans, communities and ecosystems. Sub-objective 4.1.1 calls for reducing exposure to toxic pesticides and to protect human health, communities and ecosystems from pesticide use by reducing exposure to the pesticides posing the greatest risk.

Most of EPA's voluntary pesticide risk reduction and pollution prevention programs are coordinated by the Environmental Stewardship Branch (ESB) located in the Biopesticide and Pollution Prevention Division (BPPD) of the Office of Pesticide Programs (OPP).

OPP continually evaluates its programs and activities in regard to the above objectives specified in the EPA strategic plan. Formal reports are submitted to the applicable offices detailing the program's progress in meeting objectives. In addition, OPP conducted in 2004 a *voluntary evaluation* of its premier voluntary pesticide use risk reduction program, the Pesticide Environmental Stewardship Program (PESP). (Please refer to response to survey question 3 for more information on the PESP program) Working with the Office of Policy, Economics and Innovation (OPEI) OPP developed the following objectives for the evaluation:

- Assess the effectiveness of the PESP member strategy development process
- Evaluate the capacity of EPA Staff Liaisons
- Determine the criteria for successful pesticide risk reduction strategies
- Apply lessons learned

A final report of the evaluation was issued and OPP has used the report to:

- Inform management decisions,
- Enhance organizational learning,
- Promote innovations,
- Foster better environmental results.

2. Modifications, new policies, strategies, goals or targets introduced since the first survey in 1994/5

A major factor contributing to risk reduction efforts since 1995 was the passage of the Food Quality Protection Act (FQPA) of 1996. FQPA required EPA to *reassess* all pesticide tolerances (for products

registered before 1984) within a 10 year time period using more stringent requirements. The new requirements were enacted to provide additional protection for infants and children.

FQPA required EPA to set priorities and evaluate the riskiest tolerances first. Organophosphates and carbamates pesticides were the first to be evaluated under the new, more stringent requirements. Since FQPA has been implemented, all residential uses of diazinon and chlorpyrifos have been voluntarily canceled. Agricultural pesticide uses of these pesticides have also been affected because of label restrictions added to reduce risk.

FQPA also has had an impact on minor and specialty crops, as certain pesticide uses were dropped in response to FQPA requirements. To help minor and specialty crop producers with pest management needs, FQPA called for EPA to establish a *minor crop advisor*. The minor crop advisor works with minor and specialty crop producers to identify critical pest management needs and reduced risk alternatives. Minor crop producers are encouraged to identify and prioritize new pesticide needs. OPP then expedites registrations of pesticides or pesticide uses identified by producers as critical needs or priorities if products qualify as reduced-risk or organophosphate alternatives.

Since 1995, OPP has encouraged registrants to develop pesticides that meet reduced risk requirements (overall low risk to human health and the environment and lower risk than currently registered uses) by providing expedited registration of reduced risk products. In 2003, a law was passed, the Pesticide Registration Improvement Act (PRIA), that established *pesticide service registration fees* for registration actions. Under PRIA, *expedited registration is still provided for reduced risk pesticides*. Successful reduced risk candidates have an anticipated four month shortened review time. For reduced risk candidates, summary human health and environmental fate data and information about the efficacy and economics of using the pesticide compared to riskier registered alternatives are provided by the registrant, then reviewed within a short time by the OPP reduced risk team.

3. Major risk reduction achievements over the last 10 years

Pesticide Environmental Stewardship Program (PESP)

In the first OECD Risk Reduction Survey, EPA reported the creation of a new program to reduce the risk from the use of pesticides. That program was the Pesticide Environmental Stewardship Program (PESP). At that time there were 16 member organizations in PESP.

PESP has since grown to include 147 members. PESP members are engaged in a range of activities to *further the adoption of IPM* and to achieve meaningful reductions in pesticide risk. With encouragement, direction and, in some cases the provision of *financial support*, from EPA, PESP members are engaged in *research, technical assistance, training, and outreach* to support the adoption of IPM and reduced risk approaches to pest control.

Although its initial focus was on agriculture, PESP now includes members representing *Schools, Governments, Lawns and Landscaping, and Commercial/Residential Pest Control*.

Until recently, EPA measured the success of the PESP program by the number of participating members. Now, in addition, PESP members report the success of their programs and initiatives through the annual submission of a PESP strategy and EPA also measures the success of the PESP by the number of successful strategies submitted. Using the information provided in the PESP strategies, EPA is currently working on additional *ways to measure the success* of the PESP program and its impact on the environment.

For additional information on PESP, please log on to: <http://www.epa.gov/oppbppd1/PESP>

Strategic Agricultural Initiative (SAI)

The SAI is a *regional grants program* that assists growers in the *development of pest management strategies* that identify alternatives to conventional pesticides. Initiated as a pilot in 1998, the SAI has expanded to all ten EPA regions with an annual budget of approximately \$1.8 million. Through the SAI, EPA is promoting the implementation of model agricultural partnerships to demonstrate and facilitate the adoption of pest management practices that provide growers with a reasonable transition away from the highest risk pesticides, as designated by the Food Quality Protection Act of 1996.

This project has resulted in scores of on the ground projects that are resulting in measurable environmental impacts. The SAI Team is working on *metrics and measurements* that can be used to accurately measure the results of individual projects and the impact on the environment of the SAI project as a whole.

For more information about the SAI please log onto <http://www.aftresearch.org/sai/>

IPM In Schools Initiative

The goal of this initiative is to protect children from unnecessary exposure to pesticides. Through a number of activities and workgroups, EPA provides coordination and leadership to promote the adoption of IPM in schools. EPA has developed a website <http://www.epa.gov/pesticides/ipm> and the popular brochure, Protecting Children in Schools for Pests and Pesticides. In addition, EPA has supported the two technical resource centers for IPM in schools and has supported the development and implementation of the Monroe Pilot Model which take a hands-on approach to the implementation of IPM in schools. Where the Monroe model has been used, there has been a 92% reduction in pesticide use and a 50% reduction in most traditional applications.

Lawns and the Environmental Initiative

The goal of this program is to encourage environmentally responsive lawn and landscaping practices. Through its membership in a national steering committee made of the governmental, industry and environmental organizations, EPA is working to develop programs to educate the public on the appropriate use of pesticides, fertilizers, water, plant species, and other best management practices to enhance residential landscapes while protection human health and the environment.

The Initiative is currently working to develop a “score card” approach to identify *measures of success* for the program.

Assistance Agreements

EPA is providing *direct funding* to organizations that support the goals of pollution prevention, promoting IPM and reducing the risks from the use of pesticides. Funded organizations work with EPA to identify research, projects and activities that will have the greatest impact and then they provide financial and staff support. EPA also works closely with funded organizations to identify risk reduction goals, successful approaches, available matching funds and methods to measure success.

Funded organizations submit annual reports of their projects which EPA uses to measure the success of the program and to report its own progress (see GPRA above).

Coordination

EPA is coordinating with a number of other Federal, State and Local Agencies to promote IPM and Pesticide Use Risk Reduction. EPA staff serve on the number of steering committees, commissions and special projects including and last year worked with the following:

- Federal IPM Steering Committee
- 2006 IPM Symposium Steering Committee
- USDA Cooperative State Research Education and Extension Service
- USDA Sustainable Agricultural Network Program

EPA staff are also serving on the Advisory and Steering Boards of all 4 Regional IPM Centers that are funded by the U.S. Department of Agriculture.

EPA/USDA Partnerships

EPA-OPP has a strong partnership with the USDA Interregional Regional Project No. 4 (IR-4 project). The IR-4 Project generates *data to support pesticide registrations for minor and specialty crops* that would otherwise not be done by pesticide registrants due to lack of economic incentives. The passage of FQPA set in motion the IR-4/OPP partnership to pursue registration of reduced risk pesticides for minor and specialty crops. IR-4 started integrating new reduced risk products into their program in 1997 with 30% of their projects involving reduced risk pesticides. That trend has grown; now 70 - 80% of IR-4 projects are for reduced risk products. OPP and IR-4 have coordinated their work plans, increasing efficiency and numbers of reduced risk pesticide registrations for minor and specialty crops. In 2000, 901 new pesticide uses for minor and specialty crops were registered and over 60% of them were for reduced-risk pesticides. In 2002, 1352 new pesticide uses for minor and specialty crops were registered and 80% of them were reduced-risk pesticides. Under the new PRIA regulations, IR-4 food use requests are exempt from fees. IR-4 also can request expedited registration for reduced risk pesticide uses if registrants will support the uses.

EPA also works in partnership with USDA's Office of Pest Management Programs (OPMP) on Pest Management Strategic Plans (PMSP). With the help of USDA, PMSPs are developed by growers (by commodity and state) to identify *critical pest management needs and strategies* for IPM/reduced-risk programs. OPMP works with the four USDA Regional IPM Centers to facilitate meetings and provide support for the development of the PMSPs. In addition, the IPM Centers also work with USDA-Cooperative State Research, Extension and Education Service (CSREES) to focus CSREES-FQPA grants on critical needs. The CSREES *grants* that focus on developing reduced risk pest management programs include: Pest Management Alternatives Program grant (PMAP - usually funded at about \$1-2M per year); Methyl Bromide Alternatives grant (\$3-5M/year); Crops at Risk (i.e. from FQPA) grant; RAMP grant (about \$4M/year) for major crops. CSREES has done an excellent job of awarding these grants for critical needs and continues to be strong partner.

A new partnership is also developing between OPP and USDA-Natural Resource and Conservation Service (NRCS). NRCS administers conservation programs under the Farm Bill. The 2002 Farm Bill includes new conservation programs and enhanced support and scope for existing conservation programs. NRCS has been working with EPA and other parts of USDA to add incentives to producers for using reduced risk pest management techniques, particularly for minor and specialty crop producers.

4. Least successful strategies which faced difficulties

Although all of the programs mentioned in 3 above are considered to be successful both within and outside of EPA, most have face similar difficulties that can be linked to *the voluntary nature of the programs*.

- EPA cannot require reporting of voluntary activities (except in the case of grants or cooperative agreements) which creates challenges to reporting program success.

- Activities to identify and develop metrics and measures of success for voluntary pesticide risk reduction programs are fairly recent and are on going.
- Data collection and environmental monitoring are extremely expensive which limits EPA and its partners' ability to measure the success of their programs.
- Competing priorities and shrinking budgets often place limits on EPA's partners' ability to continue or expand pesticide risk reduction activities.

Part B: The Next Ten Years

5. Future Work

Where are the most important areas for future work or gaps that need to be filled?

EPA must continue to clearly state its goals for pesticide risk reduction to its *partners*. EPA must also work to understand the issues and goals of its partners and to provide leadership, guidance and resources to help its partners achieve our mutual goal of Pesticide Use Risk Reduction.

EPA and its partners will continue to work together to *develop new metrics and measurements for success* of voluntary pesticide use risk reduction programs and activities.

EPA will continue working with NRCS to use the conservation programs to offset costs of reduced risk pest management adoption. This offers a good way for producers to incorporate environmental stewardship into their farming practices.

Which are the best areas for international collaboration? What could the OECD Pesticides Programme do to help countries enhance risk reduction efforts?

The OECD could consider a coordination role in the development of *international standards for measuring the success of voluntary pesticide risk reduction programs*.

The OECD could also expand its activities to *communicate and transfer successful approaches and technologies*, across international lines, for reducing the risk from the use of pesticides.

The OECD could increase its efforts to encourage Member countries to *adopt the OECD guidelines for the registration of pheromones and microbial pesticides* to bring these biopesticides to the market more rapidly.

Contact Person:

EC

Part A: Evaluation of Pesticide Risk Reduction Efforts since 1994/5

1. Introduction of the policy framework/context for pesticide risk reduction

Over the last ten years the European Union has introduced measures to reduce possible hazards and risks related to the use of pesticides in different policy areas.

6th Community Environment Action Programme

By adopting the 6th Community Environment Action Programme (Decision No 1600/2002/EC of 22 July 2002) the European Parliament and the Council gave clear signals that the reduction of the use of pesticides that possibly present hazards or risks to human health or the environment has high priority for the European Union. Two main areas of activity have been pointed out:

1. full implementation and revision of Directive 91/414/EEC, which is the legal basis for authorisation of pesticides in the European Union and
2. the establishment of a Thematic Strategy on the Sustainable Use of Pesticides, which aims at minimising hazards and risks to human health and the environment from the use of pesticides, consistent with the necessary crop protection.

Common Agricultural Policy (CAP)

Market and income policy (first pillar)

The 1999 CAP reform introduced the so-called 'cross-compliance' provision. It entailed the optional use of reductions of direct payments in case of non-respect of statutory environmental requirements and so-called specific environmental requirements, including those related to the proper use of plant protection products (PPPs). The 2003 CAP reform reinforces this provision, which becomes compulsory from 2005 onwards (Regulation 1782/2003). The full granting of direct payments will be linked to the respect of obligations arising from 18 legislative acts, among which those provided for by Article 3 of the PPPs directive (Dir. 91/414/EEC). Article 3 of Dir. 91/414/EEC prescribes that PPPs must be used properly and whenever possible according to the principles of integrated control. Should farmers not respect this requirement, they will see their direct payments partially or entirely reduced.

In addition, the 2003 reform has introduced the decoupling of direct payments from production, which is expected to remove incentives towards intensive production and thus lead to a reduction in the use of PPPs.

Rural development policy (second pillar)

The rural development policy is a major tool that contributes to pesticide risk reduction by promoting pesticide-free or low-input farming systems. Support for sustainable rural development is provided under

Council Regulation 1257/1999. This regulation includes a range of measures that concern, among others, the maintenance and promotion of low-input farming systems and the preservation and promotion of a sustainable agriculture respecting environmental requirements. These objectives may be achieved in particular through aids for investments, training, less-favoured areas, agri-environmental measures and forestry measures. For many measures (e.g. agri-environment, less favoured areas) farmers' eligibility for support has as a minimum requirement the respect of usual Good Farming Practice (GFP), which includes in any case the respect of mandatory environmental legislation. For the agri-environmental measures, the commitments must even go beyond the application of GFP. Regarding PPPs, such commitments include reporting on actual use of PPPs, lower use of PPPs, the use of integrated pest management techniques, or conversion to organic farming.

Organic Farming

Organic farming has to be understood as part of a sustainable farming system and a viable alternative to the more traditional approaches to agriculture. Since the EU rules on organic farming came into force in 1992 (Council Regulation 2092/91), tens of thousands of farms have been converted to this system. The availability of financial support (Rural Development) for farmers to convert to organic production is designed to help the sector grow still further and to support associated businesses throughout the food chain. In organic production, as regulated by Reg. 2092/91, only products composed of substances listed in Annex II may be used as plant protection products. This list is much more reduced than the one authorised in general agriculture. Furthermore, pests, diseases and weeds must be controlled by a combination of various measures, including rotation and appropriate choice of varieties. Only in cases of immediate threat to the crop may recourse be made to products referred to in Annex II to the Regulation. These restrictions lead to a substantial reduction of hazards and risks to users, consumers and the environment.

In March 2000, the European Commission introduced a logo bearing the words 'Organic Farming - EC Control System' to be used on a voluntary basis by producers whose systems and products have been found on inspection to satisfy the relevant EU Regulations. Consumers buying products bearing this logo can be confident that, i.a., at least 95% of the product's ingredients have been organically produced, and that the product complies with the rules of the official inspection scheme.

Drinking Water

Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption sets maximum limits for contamination of drinking water with pesticides. These maximum limits are binding for Member States since they have to set maximum limits in their national legislation that do not exceed the limits in Directive 98/83/EC. Maximum limits set by this Directive are 0.1 µg/l for each individual pesticide and 0.5 µg/l for the sum of all individual pesticides detected and quantified in the monitoring procedure. For certain pesticides limits are even stricter: in the case of aldrin, dieldrin, heptachlor and heptachlor epoxide the parametric value is 0,030 µg/l.

Pollution of Water

Under Directive 2000/60/EC (Water Framework Directive), specific measures must be adopted at Community level for substances of Community wide concern against pollution of water by individual pollutants or groups of pollutants presenting a significant risk to or via the aquatic environment, including such risks to water used for the abstraction of drinking water. Such measures are aimed at the progressive reduction, and for priority hazardous substances at the cessation or phasing out, of discharges, emissions and losses. By adopting Decision No 2455/2001/EC of 20 November 2001, the European Parliament and the Council established the list of priority substances in the field of water policy and amended Directive 2000/60/EC of 23 October 2000. This list of priority substances contains several pesticides.

For pesticides of concern in specific river basins, Member States are obliged under Directive 2000/60/EC to adopt a programme of measure aiming at the progressive reduction of the pollution of these pollutants. This obligation fully replaces the existing obligation under Directive 76/464/EEC from 2013, following a transitional period.

Persistent Organic Pollutants

Regulation (EC) No 850/2004 of the European Parliament and the Council on persistent organic pollutants of 29 April 2004 was adopted in order to protect humans and the environment against hazards and risks related to the use of persistent organic pollutants. According to the Regulation, the production, placing on the market and use of substances listed in Annex I or in Annex II, whether on their own, in preparations or as constituents of articles, shall be prohibited or restricted. The lists of substances established in Annex I and II contain several pesticides.

Evaluations of the policies / plans

The progress made in the review programme of existing active substances under Directive 91/414/EEC has been evaluated in a report from the Commission to the European Parliament and the Council, which was adopted in 2001 and is available on the internet under:

http://europa.eu.int/comm/food/plant/protection/resources/ppp01_en.pdf,
http://europa.eu.int/comm/food/plant/protection/resources/ppp01_ann_en.pdf.

Since then, progress with the review programme is continuously evaluated in a report that is regularly updated and made publicly available under:

http://europa.eu.int/comm/food/plant/protection/evaluation/state_work_en2.pdf.

A lot of information on the progress of pesticide legislation in the EU including decisions on active substances is available on the internet under:

http://www.europa.eu.int/comm/food/plant/protection/evaluation/index_en.html.

Goals targets for risk reduction

Pesticide Policy

Directive 91/414/EEC sets out a positive list of active substances that can be placed on the market within the European Union. The review programme of existing active substances under Directive 91/414/EEC has been established in 4 stages. All substances of the first two stages have to be reviewed by the end of 2005. The substances under stage 3 and 4 have to be reviewed by the end of 2008. Any substances for which the review has not been finished by the respective deadline will be withdrawn from the market. Therefore, after that date and the delay given to Member States for the legislative implementation, all substances on the market in the European Union have undergone an assessment according to the requirements set out in the Annexes to Directive 91/414, as regards:

- data requirements for submission requests for authorisation,
- packaging and labelling,
- evaluation and authorisation.

The Thematic Strategy on Sustainable Use of Pesticides will aim at a continuous reduction of the risks from pesticides to human health and the environment. No quantitative targets as such will be set but a transparent system for reporting and monitoring progress made in fulfilling the risk minimisation objective will be established.

Water policy

Directive 2000/60/EC of 23 October 2000 requires that good chemical and ecological status is reached in 2015, meaning that environmental quality standards set at the Community level or for specific river basins, shall be achieved by then. For Priority hazardous substances it also sets a time limit for the cessation or phasing out of discharges, emissions and losses.

2. Modifications, new policies, strategies, goals or targets introduced since the first survey in 1994/5*Pesticide Policy*

Directive 91/414/EEC has established time limits for revision of the active ingredients already on the market before July 1993. Time limit was set at 12 years from the date of publication of the Directive. Afterwards, the time limit was extended for active substances for which the evaluation has not been completed. This extension of time limits allows Member States to authorise the marketing of certain active substances that still need to be evaluated until 31 December 2008 at the latest (Decision 2003/565/EC; OJ L 192, 25.07.2003, p. 40).

The amount of technical guidance available for the evaluation of substance dossiers has been increased and is still increasing. In particular guidance on:

- AOELs,
- dermal absorption,
- generation of residue data ante registration,
- residue analytical methods post registration and
- GLP

has been produced.

The activities within the Forum for the Co-ordination of Pesticide Fate Models and their Use (FOCUS) continuously increased the scientific background for the risk assessment in the compartments soil, surface water, groundwater and air.

In 2002 the European Food Safety Authority has been established by Regulation 178/2002 of the European Parliament and the Council. In that way, risk evaluation and risk management have been separated between two independent bodies.

Common Agricultural Policy

Two major reforms of the Common Agricultural Policy in the 1990s have taken increasingly into account the importance of the environmental dimension of farming.

The reform of 1992 marked a turning point in EU agricultural policy, not least in terms of integration of environmental concerns. Some important, specific measures to encourage environmentally friendly farming were enacted (e.g. the agri-environmental Regulation).

The 1999 reform went further in that direction. With that reform, account must be taken of environmental aims in the implementation of market policy measures. In addition, the rural development regulation consolidates earlier agri-environmental measures.

The 2003 CAP reform brings greater quality to environmental integration. The reform involves decoupling most direct aid payments from production and introduces new measures such as compulsory cross-compliance (see reply to question 1a) which can help reduce the risks linked to the use of plant protection products.

In June 2004, the European Commission published a European Action Plan for Organic Food and Farming. This Communication sets out 21 actions to help develop the organic sector and is accompanied by a Commission staff working document containing a background analysis and a comprehensive description of the proposals. This action plan is available on the internet under http://www.europa.eu.int/comm/agriculture/qual/organic/plan/index_en.html

3. Major risk reduction achievements over the last 10 years

Compared to 1994, a total of 462 active substances has been withdrawn from the market, either because they have not proven to be safe under the conditions of use supported by an applicant or because they were not supported for inclusion in Annex I to Directive 91/414/EEC.

In the same time nearly 100 active substances have been included in Annex I on the base of a common dossier on Community level, which proved that they can be safely used. The remaining approximately 500 active substances are still under evaluation.

4. Least successful strategies which faced difficulties

No response

Part B: The Next Ten Years

5. Future Work

Areas for future work/gaps to be filled

Pesticide Policy

The European Commission actually works in two important areas aiming at reduction of risks of pesticides. These two areas are the “Thematic strategy on sustainable use of pesticides” and the revision of Directive 91/414.

The “Thematic Strategy on Sustainable Use of Pesticides” focuses on the use of authorised pesticides and proposes several measures in order to reduce the risks arising from the use of pesticides. The measures that will probably be part of the thematic strategy will address among others:

- technical checks and certification of spraying equipment,
- training programs for pesticide users,
- data collection on use of pesticides,
- aerial spraying activities,
- IPM strategies in plant protection and
- protection of water.

Directive 91/414 regulates the authorisation of active substances foreseen for use in plant protection products. After being authorised for marketing within the European Union, the active substances can be used for production of plant protection products which have to be authorised by Member States prior to marketing in the respective country.

At the moment revision of Directive 91/414 is ongoing and topics which will be discussed in this process are:

- introduction of cut-off criteria into Directive 91/414 (CMR, POP),
- risk assessment for endocrine disrupters and
- introduction of comparative assessment and substitution principle into Directive 91/414.

Water policy

The European Commission is furthermore working on preparing a proposal for specific legislation on pollution of surface waters by the priority substances included in Annex X of Directive 2000/60/EC, including the establishment of environmental quality standards for the 9 pesticides included in that list, that shall be achieved by 2015. Links with the Thematic Strategy on Sustainable Use of Pesticides are also foreseen, notably as regards the measures for the protection of water.

Areas for international collaboration

Possible activities of the OECD Pesticides Programme to help countries enhance pesticide risk reduction efforts.

An area for international collaboration could be *the risk assessment* for active substances. *Models used for risk assessment* could be developed and improved in collaboration and data and findings obtained by monitoring programmes could be shared.

Contact Person: