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REPORT ON THE OECD WORKSHOP ON SUSTAINABLE PEST MANAGEMENT IN PRACTICE: ANTICIPATING AND ADAPTING TO CHANGES IN THE PESTICIDES REGULATORY LANDSCAPE

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FOREWORD

This document is the report of the *OECD Workshop – Sustainable Pest Management in Practice: Anticipating and Adapting to Changes in the Pesticides Regulatory Landscape*. This two-day workshop, held on the 1st and 2nd of December 2015 in Brisbane, Australia was hosted by the Australian Department of Agriculture and Water Resources. The workshop was co-chaired by Wolfgang Zornbach, Chair of the OECD Risk Reduction Steering Group (RRSG) and Kareena Arthy, Chair of the OECD Registration Steering Group (RSG).

The workshop focused on the approaches governments, the pesticides industry and growers use to adapt to changes in the availability of pesticide products.

The workshop consisted of presentations and discussions on the approaches governments, the plant protection products industry, researchers and growers use to prepare for and adapt to changes in the availability of pesticide products. Attendees also discussed national strategies to encourage industry and growers to prepare for, and adapt to, changes in the availability of pesticide products, the sustainable use of pesticides and the promotion of alternative methods of pest control. Presentations also described current knowledge and research on pest management that could inform future policy and regulatory decisions.

Experts from several OECD countries, the European Commission, the Business and Industry Advisory Committee (BIAC), the International Biocontrol Manufacturers Association (IBMA) and research institutes/universities as well as representatives from steering groups and expert groups of the OECD Working Group on Pesticides also participated in the workshop.

This document is being published under the responsibility of the Joint Meeting of the Chemicals Committee and the Working Party on Chemicals, Pesticides and Biotechnology, which has agreed that it be declassified and made available to the public.

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I. INTRODUCTION

This report presents the results and recommendations of the *OECD Workshop on Sustainable Pest Management in Practice: Anticipating and Adapting to Changes in the Pesticides Regulatory Landscape*. Anticipating and adapting to changes in the regulatory status and subsequent availability of agricultural pesticide products is necessary for sustainable pest management, including the use of registered agricultural pesticides. In general, the consequences of regulatory decisions and the entailing process of adaptation of the agricultural production are not widely considered within the registration process. Regulators, pesticide manufacturers and pesticide users in OECD member countries have had to adapt their practices to ensure that sustainable and effective pest management options remain possible. These changes in regulation and safeguarding integrated pest management approaches reduce risks to human health and the environment while promoting sustainable agriculture.

There are a number of drivers of change, including increasing concerns about risks and impacts of pesticides on human health and the environment, pesticide resistance, new developments in science and changes in regulatory status of pesticides. This can result in the review and transition away from older chemistries and drive the need for developing alternative pest management solutions. However, there is a lack of new alternative chemicals coming through the product development pipeline and also a lack of sustainable non-chemical solutions.

The workshop focused on the approaches governments, the pesticide products industry, regulators, researchers and growers use to prepare for and adapt to changes in the availability of pesticide products. These approaches included national strategies on regulations for interim solutions to encourage industry and grower preparedness, the sustainable use of pesticides and the promotion of alternative methods of pest prevention and control. The workshop also considered current knowledge and research on pest management that could inform future policy and regulatory decisions.

II. STRUCTURE OF THE WORKSHOP

The Workshop programme is provided in Annex 1. The workshop consisted of four sessions, each with invited speakers who addressed the topics of their sessions:

a. Challenges for sustainable pest management

b. Strategies for adapting to changing pesticide regulation

c. Promotion of a variety of sustainable methods of pest control

d. Conclusion and Recommendations

After each presentation a short question and answer session was held, with the opportunity for more discussion at the end of the seminar.

III. PURPOSE AND SCOPE OF THE WORKSHOP

The objectives of and considerations by the seminar included:

a. Regulatory authorities must re-evaluate and review older chemistries against contemporary scientific and risk assessment methodologies and in light of new science and developments in agriculture that may have long-term impacts on the regulatory framework (e.g. ensuring availability of tools for appropriate crop production and engineering solutions for risk reduction).

b. Pesticide manufacturers face decisions on whether to update data packages for older chemistries balancing their return on investment against the cost of generating the data and possible competition from other pesticide manufacturers where there is no data protection.

c. Regulators must determine how to assess older data packages or make decisions in the absence of data, and make decisions on new products based on existing data.

d. Regulation occurs in the context of broader government challenges including considerations of global trade, food safety and security, and the impact of climate change.

e. Regulations around agricultural pesticides are based on hazards and risks for human health and the environment, but do often not relate to impact assessments of regulatory decisions, e.g. removal of chemical crop protection products where no alternatives exist, impact on integrated pest management solutions, resistance management, and more broadly on national action plans for pesticide risk reduction and socio-economic impacts.

f. There is a need to achieve a mutual understanding by regulators, growers, the pesticide industry and food retailers about the regulatory process and the practical considerations of sustainable pest management.

IV. SUMMARY OF PRESENTATIONS

The full presentations are included in Annex 3

Introduction to the Seminar by the Seminar Chair, Wolfgang Zornbach, *Federal Ministry of Food and Agriculture, Germany*

1. The Chair provided an overview of the OECD and the work of the OECD's Pesticides Programme, the Working Group on Pesticides, the Registration Steering Group and the Risk Reduction Steering Group. He then gave a general introduction to the seminar by describing its structure and scope and concluded by thanking the OECD Secretariat, participants and Australia's Department of Agriculture and Water Resources for their help in preparing the seminar.

The Role of the Principles of Regulation in Adapting to Changes in the Regulatory Landscape by Dr Bernhard Johnen, *CropLife International*

2. The presentation was aimed at demonstrating how regulations should adapt to changes in the regulatory landscape. Regulation is necessary, but it should be both a stimulant and a safeguard in the service to society, agriculture and plant science with new solutions based on a solid policy framework. The principles of regulation should meet society's expectations for good regulations based on recognised regulatory principles and best practices for effective registration. Society expects that regulations will be protective with clear goals to be achieved, will be implemented with clear procedures, will be based on scientific evidence, will allow access to technology, and will be enforceable to ensure accountability. It is essential that there is a sound regulatory framework to ensure high standards for product use and to ensure the protection of the environment and human health. Transparency in the regulatory process is important; however protecting the proprietary rights of those who generate or own quality data is essential.

3. One of the recognised regulatory principles is that governments should seek international harmonisation of their approaches to regulations, wherever possible, while taking into account local needs and conditions, as well as risks, benefits and responsibilities. Another principle is the need for an effective compliance monitoring system to respond to and manage adverse incidents, while ensuring that modern standards are applied to all products within the market. In addition, there is a need to assess impacts of major changes or revisions of regulations. Any significant change should be assessed for its economic and social impact to ensure that society continues to be protected from unacceptable risks to human health and the environment, and society continues to benefit from advantages in agricultural technology.

4. This ensures that the safe use of pesticides can contribute towards sustainable food production through an appropriate understanding and active management of any risks.

5. We must look at what we are doing now. Banning existing chemicals or withdrawing certain products is not a solution, especially if the reason for this is that data packages are not up to date. Effective management of change should consider whether the registration decision can still be supported without a complete dossier and in accordance with the latest guideline requirements. Can the past track record of effective use of the product which has been protective of human health and the environment help in confirming the regulatory decision?

6. In summary, the principles of regulation should be the key guidance in adapting to changes in the regulatory landscape. At the heart of sound decision-making are high standards, good processes and an evaluation of the risk and benefits associated with the use of a product.

Australia perspective on the regulatory Landscape by Alastair James, *CropLife Australia*

7. The presentation was introduced by Kareena Arthy of the Australian Pesticides and Veterinary Medicines Authority (APVMA), who noted that CropLife Australia had a good relationship with the regulator.

8. International regulatory systems encourage innovation, whereas the Australian regulatory system does not. The life of an existing chemical can be extended through stewardship programmes and best management practices, which should be considered in the regulatory scheme. The difference between hazard and risk regulation was briefly discussed. It was noted that European regulation was hazard based which impacts regulation and the introduction of new chemistries. For example the IRAC classification of glyphosate was based on a hazard assessment and not a risk based assessment which takes into account risk management in real world conditions. APVMA's approach to neonicotinoids was discussed. In Australia there has been no sign of colony collapse disorder. Industry best management practices and the CropLife stewardship programs mitigate the risks to bees. The presentation highlighted the unique challenges Australia faces, such as pesticide run-off on the Great Barrier Reef. Continuing changes by the regulator can impact access to new chemistries, such as relocation. However continuous and tailored reforms by the regulator are improving access to new chemistries.

Presenting a case study on the New Zealand response to review outcomes by Warren Hughes, Principal Adviser ACVM Regulation and Assurance, *Ministry for Primary Industries New Zealand*

9. New Zealand operates under the Ag*ricultural Compounds and Veterinary Medicines (ACVM) Act 1997* (administered by the Ministry for Primary Industries (MPI)), the Ha*zardous Substance and New Organisms (HSNO) Act 1996* (administered by the New Zealand Environmental Protection Authority (EPA)) and the *Foods Act 1981,* for maximum residue limits, also administered by MPI.

10. Recently, the New Zealand EPA conducted a review of organophosphates/carbamates (OPC) and agreed to reassess 29 active ingredients due to environmental and health concerns. An outcome of the EPA reassessment was a phase-out period for a number of the active ingredients and the revision of the acceptable daily intake values.

11. The outcome of this review meant the dietary intake exposure of some of the OPC active ingredients was no longer acceptable. Consequently, affected products would need to be reassessed under the ACVM Act. The main option of removing label claims was discussed with key stakeholders such as registrants and producers. In particular, advice on critical claims that needed to be retained, claims that could be removed and the availability of data. Throughout this process, stakeholder consultation was vital.

12. There were a number of implications of the review. First, registrants were given a timeframe to update the labels to reflect the review outcome. Second, it was important to communicate these changes to growers, particularly for products where off label use is now prohibited. Third, the tools available for some crops were quite restricted and that could result in the use of other pesticides off-label and that that non-compliance with off label restrictions could occur. And finally, the review showed that access to new chemistries for growers could be problematic in New Zealand as it is a small market for pesticides and, internationally-speaking, crops in New Zealand are considered minor crops.

13. In conclusion, most registered trade name products can be used off label provided residues are managed, but where it is prohibited there is potentially a communication issue Legislative changes are being made to the ACVM Act to allow for data protection in a wider range of situations. There is a

growing need to encourage the producer sectors and registrants to work in a collaborative way to support label claims for existing chemistry.

14. Re-assessments are an important part of a regulatory system. They provide opportunities to remove products from the market which pose health or environmental concerns or to modify controls of products to reduce or eliminate those concerns. The re-assessment phase is both time consuming and resource intensive for both the regulator and affected chemical registrants.

15. Monitoring is important as a key tool for identifying new problems with certain products and to determine what can be used as alternatives.

16. There was a discussion among participants about the long phase-out period that New Zealand EPA set. This was to allow time for industry to find alternate products.

Administrative regulations and adjustments in plant protection by Klaus Gehring, *Bavarian State Research Centre for Agriculture, Germany*

17. The presentation addressed agriculture and plant protection in Germany, the administrative regulations, and examples of regulations, adjustments and future prospects.

18. In Germany there are approximately six major arable crops, with sugar beet having the highest total yield of 65 tons per hectare on average. Other major crops include cereals (particularly winter wheat, winter barley, rye, triticale and summer barley), maize, silage maize, winter canola and potatoes.

19. The restriction of administrative regulations was highlighted with the prohibition on the use of atrazine as herbicide for maize in 1991 due to groundwater contamination. At the time, the price was very low, it was a broad active herbicide and it had good results for use with maize. With the restriction of atrazine it meant higher price alternatives, lower efficacy and lower crop safety. A further example was with strong limitations for Clomazone as a herbicide for canola in 2012 because of leaf spots in nearby crops and plants. There was no recommendation of Clomazone by the plant protection service. A substitution with Metazachlor was available, however the consequences were a greater risk for groundwater contamination and lower efficacy for control of Cranesbill and Hedge Mustard.

20. Germany is faced with the high risk of losing active ingredients/ pesticides due to the hazard to the environment, pollution of water/groundwater, risk for human health, toxicity for wildlife and resistance for pests, weeds and pathogenic organisms.

21. The participants discussed alternative approaches to pesticides in Germany such as nematodes and crop rotations.

Molinate Case studies on successfully avoiding or managing negative impacts of significant regulatory discussion by Matt O'Mullane, *Australian Pesticides and Veterinary Medicines Authority*

22. The APMVA recently conducted a review of the chemical Molinate. The presentation outlined key factors, the risks involved, issues faced, what worked well and the key learnings.

23. Customising risk communication with science-based hazard and exposure assessment leads to risk characterisation equalling policy-based achievable goals.

24. The chemical review program is a process for reconsidering existing active constituents, product labels and whether credible new data sources raise concerns. The program targets high risk chemicals, a sound legislative basis, the importance of applying regulatory science and risk analysis, and the ability for

the scope to be determined on a case-by-case basis. This can be based on public health, environment safety, chemistry and manufacture, target animal or crop safety, worker safety, residue and trade or efficacy. The Review process is a nine-step system, from the nomination of a review (anyone can nominate) to the implementation of a review decision.

25. Molinate is a selective thiocarbamate herbicide that is used exclusively in rice cultivation. Its main targets are barnyard grass, silver tip or brown beetle grass. The application method for this chemical is ground or aerial application.

26. The reason it was nominated was due to neurotoxicity and developmental toxicity concerns. The review scope was determined to assess environment and occupational health and safety concerns. The process identified significant data gaps and no alternatives.

27. It was acknowledged that the timeframe from the date of commencement to the final regulatory decision was quite long. It was highlighted that the engagement was ongoing and from the start, which is believed to have been one of the contributing factors why engagement for this review worked. This helped in managing the decision impacts. Due to the early engagement, the regulator was able to involve industry and user groups in problem formulation and maintain momentum. There were opportunities to engage, understand the impacts of regulatory decisions and be prepared to take a different approach.

28. The key learnings for the review were that early engagement lays the foundation for managing tough regulatory decisions, and it is important to be strategic, recognise the problem and have a plan to manage expectations, build relationships with consistency, accountability and transparency, listen and adapt and consider the environment that you are in.

29. Participants discussed the public consultation period during the review. The public consultation period was designed to make the APVMA accessible to the public. This was done through emails to the community, non-government organisations, industry and farmers. There was also targeted consultation.

National EU Project to accelerate sustainability of plant protection by Susanne Sutterlin, *Directorate General Agriculture Plant Health*

30. There is currently an EU project to accelerate sustainability of plant protection. There are several intensive production areas in the Netherlands that include bulbs, glasshouse production and arable crops. The Netherlands has a National Action Plan for plant protection. This includes accelerating the promotion of IPM, extending the tool box for plant protection with lower risk plant protection methods and techniques and placing an emphasis on healthy crops. The Dutch Green Deal is aimed at the stimulation of sustainable growth, and is carried out through co-operation between stakeholders and the government.

31. Participants discussed the green team and how they will work together. The green team will separate risk management from risk assessment. The green team will consist of a board of authorisation; however the Ministry will provide the framework. The green team will look into IPM and plant protection products (PPP) and what they want in their 'toolbox' for plant protection. A question was raised about the two pilot programs for active constituents. After the active constituent is approved, member states implement PPP.

Practices to avoid non-intended impacts of or to adapt to regulatory changes in Japan by Yukiko Yamada, *Ministry of Agriculture, Forestry and Fisheries, Japan*

32. This presentation began by highlighting the features of agriculture in Japan. The average age of farmers in Japan is higher than 65 years, and the farming plots are small. Individual farmers may possess many plots, but these could be quite spread out. The average plot size is 0.59 ha.

33. There are three laws concerning pesticide registration in Japan: Agricultural Chemicals Regulations Law (AC Regulation Law), Food Sanitation Law and Food Safety Basic Law.

34. The government has promoted the correct and safe use, sale and storage of pesticides and provided regular guidance since 1953, in particular: "Activities to Prevent Adverse Effects to Pesticides Users" (June -August when pesticides are used the most). This was the time when incidents due to the use of highly toxic pesticides such as OPs are reported. This was co-organised by MAFF, MHLW, MOE and local governments by providing information on the nature of pesticides and related regulations to be observed, followed by a survey.

35. Major changes of regulations in the past ten years include the introduction of the "positive list" system of MRLs (MHLW), change of the application timing for rice and related changes in agricultural practice (MOE, MAFF), the introduction of ARfD and short-term dietary exposure (FSC, MHLW and MAFF), prevention/reduction of the adverse effects on honeybees (MAFF), introduction of a formal evaluation system for the "specifications" (MAFF) and continuous reform of the registration system (MAFF).

36. The introduction of the so-called positive list for pesticide and veterinary drug residues in foods in the "Food Sanitation Law" by MHLW was to prevent the sale of foods containing residues above the respective MRLs and the need to regulate the use of pesticides more thoroughly and to avoid or reduce drift.

37. In 2005, MAFF requested local governments instruct/advise farmers that in order to comply with the "positive list", mechanisms to prevent/reduce drift at the local level needed to be established.

38. Farmers were to take actions concerning the implementation of Integrated Pest Management rather than regular treatment of crops with pesticides and, when spraying, not to affect crops grown in neighbouring fields. This was a combined effort through the Japan Agricultural Cooperatives (JA) and Japan Crop Protection Association (JCPA).

39. The change of the application timing for rice and related changes in agricultural practice was triggered by a survey of water quality in 2005-2008 indicating that draft MRLs for certain herbicides in water were exceeded in some areas. The reason was that these herbicides were commonly used in these areas and the water paddy was drained during the period when the water must not be drained, which caused pesticides run-off. MAFF introduced new rules for the application timing of herbicides for rice and changed the related agricultural practice. This included label updates, application timing and sourcing alternative herbicides. Again JA and JCPA collaborated.

Challenges for adjusting to contemporary risk assessment methodology by Atsuko Horibe, *Food Safety Commission Secretariat, Cabinet Office, Government of Japan*

40. This presentation outlined the Food Safety Commission's (FSC) situation for risk assessment in Japan, the current obstacles and observations and what the outlook is for the future. The Food Safety Basic Act was enforced (16 May 2003) based on the simple recognition that the protection of human health is a top priority. There was an introduction of Risk Analysis Principles to food safety administration. FSC was established as part of the Japanese Cabinet office and its mission was to implement science-based risk assessments in an objective, neutral and impartial manner.

41. The situation of risk assessment in Japan was introduced in 2008 with the positive list. Since then the FSC has been asked to evaluate all existing active ingredients (for pesticides, veterinary drugs and feed additives). Pesticide manufacturers need to submit datasets for the FSC evaluation, even if they have no intention for second entry or establishment of import tolerance.

42. In Japan there is no system for re-evaluation. They are now evaluating all pesticides on the "Positive List", however the purpose of such an evaluation is not a "revision for provisional MRL's"; therefore this is not assumed to be a re-evaluation. The Japanese authority does not require the renewal of datasets for this evaluation (old studies are included with the submitted dataset).

43. Some obstacles caused by using old studies are that the current test guidelines have changed significantly from the old ones, there are different methodologies, different descriptions for clinical observations, breeding conditions and therefore it is difficult to understand / interpret in detail.

44. Political pressures facing Japan include how to accelerate risk assessments whilst maintaining quality? How to involve the experts (as assessors) and secretariat, especially for drafting evaluation reports? Researchers are not always suitable as assessors. How do we consider international coordination, e.g. participation in GJRs and/or other international work?

45. What is the basic understanding of the definition of "harmonise?" Where to go in the future? There is increasing difficulty in carrying out all observations using animal studies. *In silico* approaches will be used more and the tools already developed by the OECD will be examined.

Voluntary Initiative for Sustainable use in the UK by Sarah Shore, *Health and Executive*

46. This presentation was an overview of the 'Voluntary Initiative for sustainable use of pesticides in the UK'. Under the European Union's Sustainable Use Directive, (SUD), Member States must develop and deliver National Action Plans (NAP) to deliver the SUD requirements. To do this, the UK has a 'Voluntary Initiative for the Sustainable Use of Pesticides' (VI) which brings together a range of both established and new networks and activities to deliver the overall goal of sustainable use. Like many other European Member States, the UK favours 'risk reduction' rather than 'use reduction' and the UK VI sets out a range of initiatives to deliver risk reduction. The overall objective of the VI is to ensure pesticides are used sustainably, through promotion of risk reduction. In particular, the VI:

- sets objectives, targets, measures and timetables
- specifies indicators to monitor products containing substances of concern
- identifies use reduction targets where appropriate for risk reduction
- takes account of health, social , economic and environmental impacts, national, regional and local conditions and other legislation (e.g. those relating to water standards)
- promotes public participation
- is reviewed every 5 years to ensure it remains current.

47. The plan provides a balanced approach, to deliver the government's wider strategic priorities, which include:

- improving productivity and competitiveness of farming, enhancing the environment and biodiversity
- adopting a proportionate approach to regulation and removing unnecessary burdens
- reducing burdens in business.

48. Targets include maintaining current high levels of training and testing of application equipment and meeting objectives for water quality. There are measures relating to: training; sales; testing of application equipment; protection of water; minimising risk in 'sensitive areas; handling and storage practice; and use of integrated approaches. Recognising that pesticide use is not limited to agriculture, there is also a focus on improving practice in the amateur and amenity sector to promote the understanding and mitigation of risk and the importance of training initiatives.

49. It was explained how, through the VI, government departments who have a strategic oversight of pesticide issues, work together with other government and non-governmental organisations to make the best use of available resources and expertise, building on experiences gained over a number of years. In this way, the VI promotes the use of pesticides in an integrated way, as part of a range of control measures, supporting enhanced understanding and maximising the effectiveness of research and development.

50. The VI has an independent chair with a Strategy Group to provide the governance and finance structure needed to meet changing circumstances. The VI produces an annual report of achievements, which to date include:

- development of a recognisable and respected brand
- the take-up of VI measures
- a centre of expertise on stewardship schemes
- the VI as an influencer on key parts of pesticide usage chain.

Canegrowers Presentation by Matt Keally, *Canegrowers*

51. Canegrowers Australia represents around 80% of Australia's sugarcane growers. Canegrowers is a highly successful lobby, representation and services group, with 19 offices across Queensland and New South Wales.

52. More than 4000 sugar growing farms operate along Australia's eastern seaboard. Use of chemicals has changed dramatically over the past 20 years. Cane growers complete voluntary training in the use of farm chemicals, which has resulted in a reduction in application rates and frequency. This is not only important for the environment, but also for our growers' bottom line. Ag-chemicals are expensive and subject to frequent price hikes. Applying fertiliser more precisely ensures more efficient yields, cuts down on wasted fertiliser and protects water quality.

Diuron case studies on successfully avoiding or managing negative impact on significant regulatory decision by Sharon Pike, *Australian Pesticides and Veterinary Medicines Authority*

53. Diuron is a herbicide and algaecide used in a variety of cropping and non-cropping situations. Prior to some diuron uses being suspended in late 2011 and the finalisation of the review in November 2012, diuron was used to control weeds in agriculture—sugarcane, cotton, broad acre crops (oats, wheat, and barley) and some horticultural crops, including apples, pears, citrus, pineapples and bananas; control weeds in irrigation channels, drainage ditches, around buildings, railway lines, sheds and driveways; protect boats from marine algal growth (applied as a component of antifouling paints) and prevent algal growth in home aquariums and ponds.

54. There are more than 100 products containing diuron registered for use in Australia. The APVMA commenced a review of diuron on the basis of environmental and human health concerns, specifically the potential for diuron to contaminate the marine environment through agricultural runoff, and the possible toxicity of some impurities of diuron active constituents. Using diuron at the originally approved rates of application presented a risk to aquatic ecosystems in most situations. The main risk is that in certain situations of use the concentration of diuron in water runoff following heavy or persistent rainfall may be high enough to cause significant harm to the environment, specifically aquatic plants.

55. The 2011 human health assessment report raised no concerns in relation to the continued approval of diuron active constituents and diuron product registrations. The APVMA has concluded that registration of certain products cannot continue and these have had their registrations cancelled. The registration of other diuron products can continue with variations to labels to remove or amend those uses, where risk from runoff cannot be managed. The uses that continue to be approved are asparagus, bananas (low rates), bore drains, cotton, irrigation channels and drainage ditches, lupins, pineapples (low rates), pulses, sugarcane (limits on rates), faba beans, summer fallows, wheat, barley, oats, triticale and cereal rye, subject to additional restraints.

56. The following uses cannot continue: apples and pears, bananas (high rates), citrus, coffee, driveways, paths, lanes, drains, ditches, fence lines, car parks, tennis courts, duboisia, factory sites, commercial and industrial areas, lucerne, non-crop areas, ornamentals (daffodils, gladioli, tulips, lilium, iris), pawpaws, peas, perennial grass and seed crops, phalaris and cocksfoot, phalaris cultivars sirolan and sirosa, pineapple (high rates), rights-of-way, sugarcane (selected applications and rates), tea and vineyards.

57. In March 2012, the APVMA completed the review as it applied to active constituent approvals (approval of suppliers of diuron to product manufacturers), antifouling paints (continued registration with variations to two label instructions), pond and aquarium products (continued registration) and cotton defoliation products (continued registration after variations to label instructions). The APVMA also continued the suspension of other diuron products until 30 November 2012. The APVMA finalised the review of diuron and published the Diuron Final Review Report in November 2012.

58. The actions taken include cancellation of registration for three products, with the remainder having their registration affirmed, but with significant restrictions on how these products can be used. Some uses, including industrial applications and use in non-agricultural situations, citrus, apples and pears, ornamentals and selected tropical crops (tea, coffee, pawpaw) will no longer be approved. Other uses have been significantly restricted. The restricted uses are complex, with the uses for sugarcane and pineapples having additional region-specific and season-specific restrictions. The APVMA also issued a permit (PER13874) for the supply and use of products whose registration is cancelled or where labels have been cancelled or varied as a consequence of the review. The permit will allow an orderly phase-out of diuron products already in the supply chain or in the hands of users.

59. A no-spray window is a period of time during which diuron products may not be used at all, even if they are allowed under strict conditions at other times of the year. No-spray windows have been introduced into the label conditions for sugarcane (Queensland and NSW) and pineapple (Queensland) production. The actual no-spray period varies according to specific regional climatic and geographic conditions.

60. Alternative herbicide products exist. Users can consult the APVMA's database of registered products (PUBCRIS) and/or their state department of agriculture for further information.

Biological Control Methods, expected growth over the next 15 years and the key factors impacting their adoption by David Cary, *International Biocontrol Manufacturers Association*

61. There are non-chemical alternatives available from the biocontrol industry, including macrobials, microbials, semiochemicals and natural biochemical products. Macrobials, such as predators, parasites and other living organisms are not usually regulated as plant protection products. However, microbials, semiochemicals and natural biochemical products are often regulated as plant protection products.

62. The biopesticide market is growing quickly, and will become a major part of crop protection by 2030. It has been even forecast by some to reach 50 per cent of the PPP market by this time. Worldwide there are approximately 230 biopesticide manufacturers, servicing a biopesticide market worldwide of approximately $1.9 billion dollars at the user level. The biopesticide market is growing annually at 15-20 per cent. There are over 230 macrobials organism products, and over 450 actives incorporated into over 2300 microbial, semiochemicals or natural products worldwide. Growth areas for microbials include: bacteria for disease and nematode control, antagonistic fungi for disease control, entomopathogenic fungi, and increased use of baculoviruses in orchards and vegetables. Semiochemicals and natural products will be used as more specific niche solutions, and metabolites, fermented products and mixtures will also be used more widely.

Development of resistance management strategies and incorporation in to IPM programmes: challenges and solutions by Keith Jones, *CropLife International*

63. A challenge exists with changing grower attitudes. Growers' attitudes towards chemical products do not change until there is a pest or issue and will often make choices on an economic basis. Mode of action (MoA) labelling is important in resistance management. There is a need for a consistent approach to MoA labelling on products.

64. Participants discussed whether resistance management should be included in the registration process. IPM plays an important role in managing the development of chemical resistance. This can be done through the promotion of IPM, training and licensing of chemical users and calibration of equipment.

65. Participants discussed if the OECD had a role in consistent MoA labelling, such as colour coding or lettering.

Adapting to change by transitioning towards new pest control alternatives by Patricia Curry, *Pest Management Regulatory Agency Canada*

66. The Health Canada Pest Management Regulatory Agency (PMRA) is responsible for pesticide regulation in Canada. The program has both a pre-market assessment of pesticides and a re-evaluation program that requires the cyclical review of all pesticides at least every 15 years. Using case studies, the presentation provided insight into how Canada adapts to outcomes of the re-evaluation of pesticides by linking to pre-market registration activities.

67. A program of transition strategies which is in place to assist use sectors to transition away from pesticides or uses lost as a result of re-evaluation decisions and to promote the adoption of lower risk pesticides was described. Transition strategies are coordinated by the PMRA, working in collaboration with the federal department of agriculture and developed by multi-stakeholder working groups that include grower groups, federal and provincial experts, researchers and registrants. Lessons learned were outlined including:

- collaboration between government, agricultural stakeholders, registrants and researchers is critical to transition to alternative lower risk pesticides and tools

- it is important to involve stakeholders early in the re-evaluation process

- in re-evaluation, it is important to look at classes of pesticides rather that one active ingredient at a time, especially when considering alternative products

Herbicide resistance management and promotion of biocides by Michael Goodis, *EPA United states of America*

68. The USA has a specific division responsible for the registration of bio-pesticides. The presentation highlighted that growers are resistant to change despite the EPA's vison and mission to lead in bio pesticide regulations and pollution prevention and protect human health through regulating bio-pesticides and prevention practices.

69. Over the past 10-15 year there has been a marked growth in use and interest in bio-pesticides. The presentation highlighted the concerns in relation to bio-pesticide adoption, which were difficulty to use, lack of familiarity and knowledge about products and that there was not always a one size fits all solution.

70. Considerations include: what direction is the future heading towards, how does industry envision the future of bio-pesticides, how does a company decide if they want to enter the bio-pesticide market, and what steps need to be taken to encourage greater consideration of bio-pesticides domestically and internationally?

V. SEMINAR RECOMMENDATIONS AND FINDINGS

71. Participants agreed that the presentations at the seminar, as well as being interesting and informative, had been notably diverse, covering approaches and concerns from regulatory, industry and research perspectives. Following the presentations the floor was opened to all workshop participants for a roundtable discussion.

72. In summary, key findings and comments from the workshop participants are the following:

a. Leadership by regulators and engaging with stakeholders was important. Participants stated that everyone should aim to find the appropriate way to involve stakeholders in the process and to become part of the solution, bearing in mind that the problems can continue to occur if there is no solution.

b. There is a lack of return on investment for chemical companies, especially during the chemical review process. Often a chemical company is no longer involved and the regulator needs to engage directly with the grower. In most cases growers don't understand the regulatory systems and do not have the funds to generate additional data. The Australian Molinate review was a good example of where industry could provide funding for additional data.

c. There would be value in considering the "Green team" concept (see the Netherland's presentation) where the government, including extension officers and regulatory staff, work out requirements.

d. In the Netherlands there is an expert centre where farmers can raise issues and prioritise them, and industry looks for product solutions to these issues. There is a special fund in the Netherlands which supports and facilitates the work of an expert and green team.

e. The minor use system in Canada at Health Canada and the Pesticide Management Centre of Agriculture and Agri-Food Canada is a good example of leadership with growers.

f. Leadership vs coordination was raised as an issue.

g. Consideration should be given to the use of biologicals as plant protection products and issues of registration due to their niche market.

h. Due to limited resources and common concerns, members need to work together to coordinate on chemical reviews and changes in the regulatory landscape. The main issue governments, growers and registrants must deal with at times is the development of sufficient data to support the registration of uses so that products are made available when needed, while ensuring that the uses do not pose unacceptable risks.

i. There are often no "silver bullet" solutions to the loss of chemicals from the arsenal of plant protection options as a result of changes in the regulatory landscape.

j. There is a need for the development of best practices for governments, user groups and the pesticide product industry on how to avoid non-intended impacts of, or to adapt/respond to, regulatory changes.

k. Governments could work more closely on reviews of existing chemicals and planning for maintenance, transitions and the development of solutions, including balanced impact assessments of those solutions.

l. OECD member countries may want to consider the development of new tools and guidance to enable harmonised evaluations of pesticide products and possibly also emerging application technologies (e.g. new spray drift minimisation technology and remote control aerial application).

m. Regulators may learn from the experiences of others on how to assess risks and benefits of possible withdrawals of specific agricultural pesticides and the criteria to be taken into account, if substitution of chemicals with high risk to human health or the environment is required.

73. The recommendations developed by the workshop participants will be forwarded to the relevant bodies of the OECD Pesticides Programme.

VI. PARTICIPANTS

74. Participants attending the OECD Seminar included:

- representatives of pesticide regulators of OECD members (Australia, Canada, Germany, Japan, Korea, the Netherlands, New Zealand, the United Kingdom, and the United States);

- international and local Australian experts dealing with issues related to the activities of regulators and changes to legislation, including Cane growers and representatives from the Queensland Department of Agriculture, Fisheries and Forestry, as well as evaluators from governmental bodies;

- and invited experts from key stakeholder groups such as industry.

A participant list is provided in Annex 2.

ANNEX 1 – SEMINAR PROGRAMME

Day		Activity	Chair and Speakers
Tuesday, 1 Dec 2015	Opening 9:00 - 9:15	Welcome addresses by OECD and hosts Outline of the workshop	Chair/co-chair –Wolfgang Zornbach/Kareena Arthy
		Session topic: Challenges for sustainable pest management	
	9.15 – 9.45	- The role of the Principles of Regulation in adapting to changes in the regulatory landscape	**Bernhard Johnen** - CropLife International
	9.45 – 10.15	- Croplife Australia – Australian perspectives on the regulatory landscape.	**Alastair James** – CropLife Australia
	10.15- 10.45	- Presenting a case study on the New Zealand response to review outcomes.	**Warren Hughes** - Principal Adviser ACVM Regulation & Assurance Ministry for Primary Industries New Zealand
	10.45 – 11.15	**MORNING TEA**	
	11.15 – 11.45	- Administrative regulations and adjustments in plant protection.	**Klaus Gehring** - Bavarian State Research Center for Agriculture, Germany
	11.45 – 12.30	- Molinate case studies on successfully avoiding or managing negative impacts of significant regulatory decisions. - Discussion	**Matt O'Mullane** - Australian Pesticides and Veterinary Medicines Authority
	12:30 - 14:00	**LUNCH**	
		Session topic: Strategies for adapting to changing pesticide regulation	
	14.00 – 14.30	- National EU project to accelerate sustainability of plant protection.	**Susanne Sutterlin** - Directorate General Agriculture Plant Health
	14.30 – 15.00	- Practices to avoid non-intended impacts of or to adapt to regulatory changes in Japan.	**Yukiko Yamada** - Ministry of Agriculture, Forestry and Fisheries, Japan
	15.00 – 15.30	- Older datasets against contemporary science and risk assessment methodologies - Current situation and challenges.	**Atsuko Horibe –** Food Safety Commission Secretariat, Cabinet Office, Government of Japan
	15.30 – 16.00	**AFTERNOON TEA**	
	16.00 – 16.30	Overview/wrap up of day 1	Chair/co-chair –Wolfgang Zornbach

Day		Activity	Chair and Speakers
Wednesday, 2 Dec 2015	**Opening 9:00 - 9:15**	Review of day 1	Chair/co-chair – Wolfgang Zornbach/Kareena Arthy
		Session topic: Promotion of a variety of sustainable methods of pest control	
	9.15 – 9.45	- Voluntary Initiative for Sustainable use in the UK	**Sarah Shore -** Health and Safety Executive
	9.45 – 10.15	- Canegrowers Presentation	**Matt Kealley -** Canegrowers
	10.15- 10.45	- Diuron case studies on successfully avoiding or managing negative impacts of significant regulatory decisions.	**Sharon Pike** – Australian Pesticides and Veterinary Medicines Authority
	10.45 – 11.15	**MORNING TEA**	
	11.15 – 11.45	- Biological Control Methods, expected growth over the next 15 years and the key factors impacting their adoption.	**David Cary –** International Biocontrol Manufacturers Association
	11.45 – 12.30	- Development of resistance management strategies and incorporation in to IPM programmes: challenges and solutions	**Keith Jones** – CropLife International
	12:30 - 14:00	**LUNCH**	
	14.00 – 14.45	- Canadas Re-evaluation program, the links to our pre market activities and case studies around the phase out/change uses for older chemicals.	**Patricia Curry** – Pest Management Regulatory Agency Canada
	14.45 – 15.30	- Herbicide resistance management - Promotion of biopesticides	**Michael Goodis**– EPA United states of America
	15:30 - 16.00	**AFTERNOON TEA**	
	16.00 – 16.30	**Conclusion** - Presentation of key lessons learnt - Discussion of the value of the workshop	**Chair:** Wolfgang Zornbach
		Final thoughts	**Chair:** Wolfgang Zornbach

ANNEX 2 - LIST OF PARTICIPANTS

Participants list for OECD Pesticides Workshop on Sustainable Pest Management in Practice

Brisbane, Australia

30/11/2015 - 2/12/2015

Allemagne/Germany	Dr. Wolfgang ZORNBACH Deputy Head Plant Protection Unit Federal Ministry of Food and Agriculture (BMEL)
	Mr. Herbert KOEPP Head of Unit Department 2: Plant Protection Products Federal Office of Consumer Protection and Food Safety (BVL)
	Ms. Silke DACHBRODT-SAAYDEH Expert Julius Kuehn-Institute (JKI) Federal Research Centre for Cultivated Plants
	Mr. Klaus GEHRING Head of Herbology Institute for Plant Protection Bavarian State Research Center for Agriculture
Australie/Australia	Ms. Kareena ARTHY Chief Executive Officer Australian Pesticides and Veterinary Medicines Authority (APVMA)
	Dr. Raj BHULA Executive Director Australian Pesticides and Veterinary Medicines Authority (APVMA)

Miss Michelle BULBROOK
Residues Evaluator, Residues and Trade
Australian Pesticides and Veterinary Medicines Authority (APVMA)

Alan HILL
Australian Pesticides and Veterinary Medicines Authority (APVMA)

Ms. Bianca LETKI
Department of Agriculture and Water Resources

Dr. Jason LUTZE
Director
Residues and Trade
Australian Pesticide and Veterinary Products Authority (APVMA)

Mr. Alan NORDEN
Executive Director
Registration Management and Evaluation
Australian Pesticides and Veterinary Medicines Authority (APVMA)

Dr. Matthew O'MULLANE
Director, Chemical Review
Australian Pesticides and Veterinary Medicines Authority (APVMA)
Australia

Sharon PIKE
Director, Risk Based Assessment Framework
Australian Pesticides and Veterinary Medicines Authority (APVMA)

	Dr. Donald WARD Director Department of Agriculture and Water Resources
	Mr. Dick WATTS Principal Scientific Advisor Department of Agriculture and Fisheries (Qld.)
	Gaye WELLER A/g Director, Insecticides and Biocides Australian Pesticides and Veterinary Medicines Authority (APVMA)
Canada	Ms. Patricia CURRY Director, Value Assessment Division Pest Management Regulatory Agency Health Canada Value Assessment and Re-Evaluation Management Directorate
Corée/Korea	Dr. Are Sun YOU Senior Researcher Agromaterial Assessment National Institute of Agricultural Science Pesticide Safety Evaluation Division
États-Unis/United States	Mr. Michael GOODIS Associate Director, Pesticide Re-evaluation Division Office of Pesticide Programs U.S. Environmental Protection Agency (EPA) Office of Pesticide Programs
Japon/Japan	Dr. Yukiko YAMADA Advisor to the Ministry of Agriculture, Forestry and Fisheries Ministry of Agriculture, Forestry and Fisheries
	Ms. Atsuko HORIBE Deputy Director First Risk Assessment Division, Food Safety Commission Secretariat Cabinet Office

	Mr. Shigenori ODASHIMA Official First Risk Assessment Division, Food Safety Commission Secretariat Cabinet Office
Nouvelle-Zélande/New Zealand	Mr. Rafael BARBIERI Advisor (Agricultural Compounds) Agricultural Compounds and Veterinary Medicines Ministry for Primary Industries
	Mr. Warren HUGHES Principal Adviser, ACVM Regulation and Assurance Systems Audit, Assurance & Monitoring Directorate Ministry for Primary Industries Regulation & Assurance Branch
Pays-Bas/Netherlands	Dr. Susanne SÜTTERLIN Co-ordinating senior officer Directorate Agriculture and Nature Ministry of Economic Affairs Plant Protection
Royaume-Uni/United Kingdom	Ms. Sarah SHORE Head of Plant Protection Products Chemicals Regulation Directorate Health and Safety Executive
Comité consultatif économique et industriel (BIAC)/Business and Industry Advisory Committee (BIAC)	Mr. Craig DUNLOP Regulatory Policy Team Leader Syngenta Crop Protection AG
	Mr. Alastair JAMES Policy Manager – Agchem Regulation & Stewardship CropLife Australia Ltd. Australia

	Dr. Bernhard JOHNEN Emeritus Director International Regulatory Policy CropLife International
	Dr. Keith JONES Director Stewardship & Sustainable Agriculture CropLife International
International Biocontrol Manufacturers Association	Mr. David CARY Executive Director International Biocontrol Manufacturers' Association
OCDE/OECD	Mme Sylvie PORET Principal Administrator ENV/EHS OCDE
	Mr. Richard SIGMAN Principal Administrator ENV/EHS OECD

ANNEX 3 – SLIDES OF SPEAKERS' PLENARY PRESENTATIONS (see separate document)

Annex 3 includes slides of all presentations given during the seminar. It is published as a separate document under the reference ENV/JM/PEST(2017)67/ANN.