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JOINT MEETING OF THE CHEMICALS COMMITTEE AND
THE WORKING PARTY ON CHEMICALS, PESTICIDES AND BIOTECHNOLOGY

REPORT OF THE OECD SEMINAR ON PESTICIDE RISK REDUCTION STRATEGIES NEAR/IN RESIDENTIAL AREAS

Series on Pesticides
No. 58

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No. 58

Report of the OECD Seminar on Pesticide Risk Reduction Strategies Near/in Residential Areas

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INTER-ORGANIZATION PROGRAMME FOR THE SOUND MANAGEMENT OF CHEMICALS
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No. 30 *Report of the OECD Pesticide Risk Reduction Steering Group: The Second Risk Reduction Survey* (2006)

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No. 38 *Survey of the Pesticide Risk Reduction Steering Group on Minor Uses of Pesticides* (2007)

No. 39 *Guidance Document on Pesticide Residue Analytical Methods* [also published in the series on Testing and Assessment, No. 72] (2007)

No. 40 *Report of the Joint OECD Pesticide Risk Reduction Steering Group EC-HAIR Seminar on Harmonised Environmental Indicators for Pesticide Risk* (2007)

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No. 49 *OECD Guidance Document on Defining Minor Uses of Pesticides* (2009)

No. 50 *Report of the OECD Seminar on Pesticide Risk Reduction through Better National Risk Management Strategies for Aerial Application* (2010)

No. 51 *OECD Survey on Pesticide Maximum Residue Limit (MRL) Policies: Survey Results* (2010)

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OECD Guidance for Industry Data Submissions on Plant Protection Products and their Active Substances-Dossier Guidance (1998, revised 2001, 2005)

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Report of the OECD Workshop on the Economics of Pesticide Risk Reduction (2001)

Report of the OECD-FAO-UNEP Workshop on Obsolete Pesticides (2000)

Report of the OECD Pesticide Aquatic Risk Indicators Expert Group (2000)

Report of the 2nd OECD Workshop on Pesticide Risk Indicators (1999)

Guidelines for the Collection of Pesticide Usage Statistics Within Agriculture and Horticulture (1999)

Report of the [1st] OECD Workshop on Pesticide Risk Indicators (1997)

Report of the OECD/FAO Workshop on Pesticide Risk Reduction (1995)

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FOREWORD

This document is the report of the OECD *Seminar Pesticide Risk Reduction Strategies near/in Residential Areas* that was held on 17 November, 2009 in Tokyo, Japan. It was hosted by the Japanese Ministry of Agriculture, Forestry and Fisheries (MAFF) and was chaired by Dr. Wolfgang Zornbach of the German Federal Ministry of Food, Agriculture and Consumer Protection.

This was the eleventh in a series of Seminars organised by the OECD Pesticide Risk Reduction Steering Group, a sub-group of the OECD Working Group on Pesticides. These Seminars focus on key issues in pesticide risk reduction of concern to OECD governments. The Seminars are intended to provide an opportunity for OECD governments to discuss the issues together with non-governmental stakeholders and to develop recommendations for further OECD activities.

After a series of presentations on governments' and other stakeholders' approaches and initiatives (copies of all presentations are in Annex 3), the Seminar discussed the various issues associated with pesticide professional use *near* residential areas (e.g. agricultural fields) and *in* residential areas (e.g. horticulture, public/urban areas, sport grounds): legislative context; by-stander and resident exposure; risk assessment and management approaches; training of operators; communication aspects, etc. The Seminar developed four main recommendations on developing guidance and further exploring technical, information exchange and economic areas.

The Seminar report was approved out-of-session by the Working Group on Pesticides by written procedure that was finished on 15 January 2011.

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 unclassified and made available to the public.

TABLE OF CONTENTS

INTRODUCTION

1. This report presents the results and recommendations of an OECD *Seminar on strategies to achieve risk reduction regarding professional pesticide use near and in residential areas*. This one-day Seminar, held on 17 November, 2009 was chaired by Wolfgang Zornbach (Germany), Chairman of the OECD Risk Reduction Steering Group (RRSG), and took place in Tokyo, Japan.

2. The Japanese Ministry of Agriculture, Forestry and Fisheries, hosted this Seminar and organized the field trip that took place the day before in the Ibaraki Prefecture area. The field-trip day comprised several visits, including a stop at a bell pepper and paprika production site (greenhouses), a tour of a horticulture research institute including the demonstration of a sensor sprayer in an apple orchard, which was protected against spray drift with a net, and finally a visit to a large, tomato and strawberry production cooperative (greenhouses) including the demonstration of a high-tech tomato sorter. The field trip proved very helpful in the context of the RRSG Seminar that took place immediately the day after. During the field trip, participants could see Japanese agricultural and residential landscapes and understand the context of pesticide use on small farm lands that could be close to houses and densely populated areas.

3. This Seminar was the eleventh in a series of Seminars organised by the OECD Pesticide RRSG, a sub-group of the OECD Working Group on Pesticides (a group composed primarily of representatives of the 34 OECD governments but that also includes representatives of the European Commission and other international organisations, the pesticide industry, and the environmental community). RRSG Seminars focus on key issues in pesticide risk reduction of concern to OECD countries. The Seminars are intended to provide an opportunity for OECD governments to discuss these issues together with non-governmental stakeholders and to develop recommendations for further follow-up OECD activities. The OECD Pesticides Programme has made great accomplishments toward helping national governments coordinate the efficiency and effectiveness of pesticide risk reduction work, in part because of Seminars such as the one held in Tokyo.

4. Past OECD Risk Reduction Seminars are listed below:

Title of Seminar [references of publication]	**Date**	**Place**
Compliance and Risk Reduction *ENV/JM/MONO(2004)6 (*Series on Pesticides No. 24)	10 March 2003	Paris, France
Minor Uses and Pesticide Risk Reduction *ENV/JM/MONO(2005)4 (*Series on Pesticides No. 26)	4 Nov. 2003	Canberra, Australia
Pesticide Risk Reduction through Good Container Management *ENV/JM/MONO(2005)12 (*Series on Pesticides No. 28)	22 June 2004	Bonn, Germany
Risk Reduction through Good Pesticide Labelling *ENV/JM/MONO(2006)13 (*Series on Pesticides No. 29)	1 March 2005	Paris, France
Pesticide Risk Reduction through Better Application Technology *ENV/JM/MONO(2007)3 (*Series on Pesticides No. 35)	30 Nov. 2005	Wellington, New Zealand
Joint OECD/EC Seminar on Harmonised Environmental Indicators For Pesticide Risk (HAIR) *ENV/JM/MONO(2007)27 (*Series on Pesticides No. 40)	13 Nov. 2006	Bonn, Germany
Risk Reduction through Better Worker Safety and Training *ENV/JM/MONO(2008)9 (*Series on Pesticides No. 42)	21 March 2007	Brno, Czech Republic
Risk Reduction through Education / Training the Trainers *ENV/JM/MONO(2009)35 (*Series on Pesticides No. 45)	15 Nov. 2007	Mexico City, Mexico
Risk Reduction through Spray Drift Reduction Strategies as Part of National Risk Management *ENV/JM/MONO(2009)36 (*Series on Pesticides No. 46)	12 June 2008	Paris, France
Pesticide Risk Reduction through Better National Risk Management Strategies for Aerial Application *ENV/JM/MONO(2010)22* (Series on Pesticides No. 50)	24 Feb. 2009	San Francisco, US

The reports from these Seminars are available on the OECD public web site at: http://www.oecd.org/env/pesticides, under the section "Risk Reduction."

5. Members of the RRSG selected "pesticide risk reduction strategies near/in residential areas" as the topic of this Seminar considering its significance for pesticide risk reduction in the fields of human health and the environment. Previous OECD Seminars already considered some aspects of issues related to the uses of pesticides near or in residential areas. The first Seminar on *Compliance* stressed the importance of raising public awareness about pesticide risks, e.g. by using media to disseminate information to the public. The Seminars on *Good Pesticide Labelling* and on *Good Container Management* recommended that labels be in clear language and mindful of different users. More recently, the interface between agricultural and residential/urban settings has been a background and recurrent topic, such as during the 2008 Seminar on *Spray Drift Reduction Strategies* and during the last Seminar on *Aerial Application*. For example, issues associated with by-stander exposure or communication between farmers and their neighbouring communities have received a lot of attention.

PARTICIPANTS

6. People attending the OECD Seminar included:

- Representatives of the pesticide regulatory authorities of OECD countries (Australia, Austria, Canada, Germany, Japan, Korea, the Netherlands, New Zealand, United Kingdom and United States), the European Commission and Brazil (an OECD enhanced engagement country)

- Representatives from industry, including CropLife International (the international association of pesticide manufacturers), BIAC (Business and Industry Advisory Committee to the OECD) and IBMA (International Biocontrol Manufacturers Association)

- International experts dealing with issues associated with pesticide use near/in residential areas from other key stakeholder groups such as Pesticide Action Network Asia-Pacific and Japanese NGOs.

7. A participant list is provided in Annex 2.

PURPOSE OF THE SEMINAR

8. The main objectives of the Seminar included:

- to identify key issues, specific risks and challenges of pesticide use and risk reduction near/in residential areas

- to provide updates of national and international legislative, non-legislative and technical activities and initiatives for requiring or promoting the adoption of risk reduction practices and technologies by farmers (and other professional agricultural pesticide users) near residential areas, and for promoting information towards the public

- to exchange information on OECD countries' current risk reduction activities near/in residential areas

- to suggest risk reduction policy options for protecting human health and the environment in residential areas and to promote a better understanding of issues among all stakeholders involved

- to suggest and discuss options of further steps for OECD countries and key stakeholders in OECD and non-OECD countries to address the identified issues

- to recommend possible further steps for OECD.

SCOPE OF THE SEMINAR

9. The scope of the Seminar was on issues and risk reduction strategies regarding *professional* pesticide uses:

- in agricultural fields near/along residential areas, and
- in residential areas and other settings (e.g. horticulture settings, golf courses, public/urban areas such as sport/leisure yards, streets, public gardens, schools, railways).

10. The topic of private/amateur uses of pesticides in private homes and gardens was not covered during this Seminar. It may be the topic of a future OECD Seminar.

11. In particular, the following issues were presented during the Seminar:

- Requirements/regulations/restrictions for pesticide uses near/in residential areas
- Specific training/certification programs for applications near/in residential areas
- By-stander (including children/infant) exposure models and risk assessment/management approaches
- New/specific application technologies and approaches for managing risks (spray drift, run-off, volatilization) near/in residential areas
- Protection of by-standers and neighbouring communities as well as the environment, including home gardens, streets, public parks.
- Communication/advice/education towards by-standers and neighbouring communities (i.e. information about pesticides and related risks, alert/reporting systems, hot lines, use of media, etc.)
- Conflict between residential development and agricultural lands
- Recommendations for improving risk reduction strategies for pesticide use near/in residential areas.

STRUCTURE OF THE SEMINAR

12. The first part of the Seminar in the morning and early afternoon was devoted to informative presentations from governments and other stakeholders. The second part of the afternoon consisted of roundtable discussions that built on issues that arose from the presentations, and recommendations for the OECD. The Seminar Programme is provided in Annex 1.

GOVERNMENT AND STAKEHOLDER EXPERIENCE & PERSPECTIVES

13. First, government representatives of Australia, Japan, New Zealand, UK, and US, and the European Food Safety Authority presented their experiences and recent initiatives with issues associated with pesticide use in/near residential areas in their own countries/regions. Then representatives of the industry (pesticide manufacturers) and NGOs presented their perspectives, actions and concerns.

14. Below are listed the main topics covered in the presentations. More detailed information can be found in the slides of presentations that are grouped in Annex 3.

- *Recent developments in pesticide and environmental legislative contexts to consider and protect by-standers and residents* (preparation of European guidance for exposure assessment, revision of country regulations to include by-stander exposure to spray drift)
- *Specifics of by-standers and residents* (indirect exposure during and after application; by-standers and residents are not like operators nor like workers; examples of definitions for by-standers and residents were provided)
- *By-stander and resident exposure* (routes of exposure: dermal/oral/inhalation, specific models/scenarios, studies and risk assessment)
- *Spray drift considerations and modelling*
- *Development/promotion of effective technologies (equipment/formulation)* to reduce drift and thus to reduce pesticide risks
- *Promotion of best practices that reflect use context*
- *Urban and rural interface* (issues associated with the urbanisation of the rural landscape, land planning initiatives to protect neighbours while keeping sufficient good quality agricultural lands)
- *Use of (vegetative) buffer zones* (however not always practicable depending on the size of the country and the type of agriculture)
- *Importance of education and appropriate training of pesticide users* (development of specific educational/training programmes, seminars and manuals focusing on environmental and health safety aspects in residential areas; promotion of activities involving local governments)
- *Management of risks through pesticide re-assessment and risk/benefit analysis*
- *Communication and information aspects* (notification to residents and by-standers, other communication programmes to limit complaints and media coverage associated with spraying near homes and public sites)

- *Promotion of mutual understanding between farmers and neighbours* (in order to improve relationships and increase public awareness)

- *Divergence of views and perceptions of pesticide "risks"* by farmers/users or by concerned rural residents

- *Information on websites* (many presentations included links to information on pesticide use and risk assessment in/near residential areas)

SEMINAR RECOMMENDATIONS AND FINDINGS

15. Following the presentations reviewing the existing initiatives in OECD countries and among various stakeholders, the floor was opened to all Seminar participants for a roundtable discussion. The following points guided the discussion:

- Specific aspects of uses near residential areas (e.g. agricultural fields) and. in residential areas (e.g. horticulture, public/urban areas, sport grounds)

- Key issues and challenges of pesticide use in or near residential areas

- Good practices and innovative approaches for managing risks near/in residential areas

- Regulatory requirements that exist in different countries, and existing guidance and other voluntary measures concerning pesticide use near/in residential areas

- Risk assessment/management approaches

- Communication aspects (towards by standers and neighbouring communities), i.e. alert/reporting systems, hot lines, media

- Opportunities for further development for all stakeholders, governments, industry, NGOs and OECD.

16. All participants made knowledgeable interventions which contributed to a better understanding of the issues associated with professional pesticide use in or near residential areas and helped the group reach recommendations on follow-up steps for OECD on this topic.

17. Summarising the discussions among participants and taking into account the suggestions made around the table, the Chair developed the following recommendations that fell into four work areas:

1. **Guidance development**
   → *developing guidance on pesticide spray drift risk assessment*

2. **Technical activity**
   → *exploring the feasibility of developing standards for the testing of nozzles*

3. **Exchange of information**
   → *learning about other countries' risk management and risk mitigation approaches as professional pesticide use in/near residential areas is concerned*

4. **Economic study**
   → *reviewing external costs of urbanization of agricultural lands*

18. Regarding the first recommendation to develop a guidance on pesticide spray drift risk assessment, many participants were interested in reviewing the parameters used in existing spray drift deposition models, as well as reviewing existing data sets, identifying data gaps and listing deposition studies (and spraying conditions under which they are conducted). By collecting this data and using a science-based approach, it was felt possible to identify parameters that lead to variability and differences in outcomes among countries. Thus, it would be possible to explain why, with similar data, individual countries end up using different approaches. The Seminar suggested preparing a short-term and long-term workplan for international work on spray drift risk assessment, including harmonization where feasible and practical. It was also suggested liaising with EFSA to see if the timing of EU guidance development could be aligned with that of OECD.

19. Regarding the second recommendation that is of more technical nature, some participants suggested new work on standards for the testing of nozzles. Before undertaking any new work, it was recommended to look at what other organizations, such as ISO, were doing.

20. Regarding the third recommendation that relates to communication / exchange of information in the area of pesticide risk management, many delegates were eager to learn about other countries' risk management and risk mitigation approaches as far as professional pesticide use in/near residential areas is concerned. A first step could be e.g. a survey to collect, hence better understand, risk management and risk mitigation approaches/options used and developed by governments. This recommendation deals with various risk management issues such as notification and alert systems, buffer zones, risk reduction technologies, training, communication aspects (e.g. behaviours/perceptions of farmers and residents), etc.

21. Regarding the fourth recommendation of more economic nature, some participants were interested in reviewing the external costs of urbanization of agricultural land and identifying those who pay these costs (farmers? society?). An initial study could review the costs of buffer zones. To start with, the Seminar recommended that the OECD Secretariat investigate in-house whether a study on external costs of urbanisation of agricultural land had already been conducted by OECD groups, either in the environment or agriculture directorates.

Note:
The recommendations developed by the Seminar participants will be forwarded to the relevant subsidiary bodies of the OECD Pesticides Programme, the members of which will consider these recommendations and agree on which one(s) to initiate, if any.

ANNEX 1

PESTICIDE RISK REDUCTION STEERING GROUP

SEMINAR ON PESTICIDE RISK REDUCTION STRATEGIES NEAR/IN RESIDENTIAL AREAS[1]

Tuesday 17 November 2009
Tokyo, Japan
United Nations University, Elizabeth Rose Conference Hall

Final Programme

Chair: Wolfgang Zornbach, Germany

9.30 a.m.	**Introduction** • **Opening and welcoming remarks – Japan** *(Dr. Yukiko YAMADA, vice-Chair of the OECD Working Group on Pesticides and Deputy Director-General, Food Safety and Consumer Affairs Bureau, Ministry of Agriculture, Forestry and Fisheries)* • **Purpose and structure of the Seminar** - *Chair* • **Tour de table** to introduce participants
	Government Regulatory Initiatives, Experience and Perspectives • **Japan***: Policy on the Pesticide Uses near/in the Residential Area - Current Situation* (Ms. Atsuko HORIBE, Deputy Director, Agricultural Chemicals Office, Plant Products Safety Division, Food Safety and Consumer Affairs Bureau, Ministry of Agriculture, Forestry and Fisheries) • **United Kingdom**: *Agricultural pesticides and bystander/resident exposures in the UK* (Mr. Paul HAMEY, Principal Scientist Human Exposure (Plant Protection Products), Chemicals Regulation Directorate, Health and Safety Executive) • **United States of America:** *Concepts of US EPA's Exposure Assessments for Residential Use Pesticides* (Mr. Jay ELLENBERGER, Deputy Director, Field and External Affairs Division, Office of Pesticide Programme, US EPA) • **Australia:** *Public health considerations of bystander exposure to spray drift (*Dr Don Ward, Acting Director, Chemical Policy Section, Office of Chemical Safety and Environmental Health, Australian Government Department of Health and Ageing)
	• **European Union:** *Preparation of a Guidance Document on Pesticide Exposure Assessment for Workers, Operators, Bystanders and Residents* (Mr. Paul HAMEY, UK, on behalf of Ms. Muriel DUNIER-THOMANN, European Food Safety Authority)

[1] Note: The topic of private/amateur uses of pesticides in private homes and gardens is not covered during this Seminar. Only **professional pesticide uses** are addressed.

	• **New Zealand:** *Managing Pesticide Risk near/in Residential Areas – A New Zealand perspective* (Warren HUGHES, Programme Manager, New Zealand Food Safety Authority) • **Other countries are invited to make presentations on their experiences**
	Industry activities • **Crop Life International:** *Use of Pesticides near and in Residential Areas: A Special Case?* (Bernhard JOHNEN / Keith JONES)
	Perspectives from the Public • **Green and Safety Promoters Association, Japan:** *Education/Training for Reducing Risk Arising from Spraying Pesticides* (Mr. Yoshihiko CHINO, Chief, Pesticide Safety Counselling Division) • **University of Queensland, Australia:** *Harmonising Agricultural and Residential Land Practices within Regional Queensland* (Mr Mark PACE, Director, G-VEC) • **Pesticide Action Network:** *Request for Reconsideration over Japanese ODA Policy on Promoting Pesticide Impregnated Mosquito Net and Domestic Policy on Aerial Spraying of Pesticide from the View Point of Risk Reduction Strategy* (Dr. Koa TASAKA, Steering Council Member of PAN Asia & Pacific) • **Other NGOs and associations are invited to make presentations on their experiences**
	Round-table Discussion (non–exhaustive list) • Regulatory requirements that exist in different countries, and existing guidance and other voluntary measures concerning pesticide use near/in residential areas • Specific risks and challenges • Specific aspects of uses near residential areas (e.g. agricultural fields) vs. in residential areas (e.g. horticulture, public/urban areas, sport grounds) • Good practices & innovative approaches for managing risks near/in residential areas • Risk assessment/management approaches • Relative effectiveness of different risk reduction methods • Training/certification for application near/in residential areas • Communication aspects (towards by standers and neighbouring communities), i.e. alert/reporting systems, hot lines, use of media
	Summary of the Discussion, Ideas for Follow-up, Recommendations for possible further OECD work
6.00 p.m.	End of the Seminar

ANNEX 2

OECD SEMINAR ON RISK REDUCTION STRATEGIES IN/NEAR RESIDENTIAL AREAS

17 November 2009, Tokyo, Japan

LIST OF PARTICIPANTS

Australia/Australie

Mr. Gary FAN
Senior Policy Advisor
Agricultural and Veterinary Chemicals Section
Australian Government Department of Agriculture, Fisheries and Forestry

Dr. David LOSCHKE
Principal Scientist
Australian Pesticides & Veterinary Medicines Authority (APVMA)

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Chairman of Technical Committee
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Mr. Peter HORNE
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Citizens Against Chemical Pollutions

Takeshi YASUMA
Citizens Against Chemical Pollutions

Green and Safety Promoters Association

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Chief
Pesticide Safety Counseling Division

OECD

Ms. Beatrice GRENIER
ENV/EHS
OECD

Mr. Richard SIGMAN
Principal Administrator
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ANNEX 3

LIST OF PRESENTATIONS

Presentation 1
Policy on the Pesticide Uses near/in the Residential Areas – Current Situation
Japan, Atsuko HORIBE

Presentation 2
Agricultural Pesticides and Bystander/Resident Exposures in the UK
UK, Paul Y. HAMEY

Presentation 3
Concepts of US EPA's Exposure Assessments for Residential Use Pesticides
USEPA, Jay ELLENBERGER

Presentation 4
Public Health Considerations of Bystander Exposure to Spray Drift
Australia, Donald Alan WARD

Presentation 5
Preparation of a Guidance Document on Pesticide Exposure Assessment for Workers, Operators Bystanders and Residents
European Food Safety Authority, Paul HAMEY

Presentation 6
Managing Pesticides Risk Near/in Residential Areas- A New Zealand Perspective
New Zealand, Warren Hughes

Presentation 7
Use of Pesticides Near and in Residential Areas: A Special Case?
CropLife International, Bernhard JOHEN and Keith JONES

Presentation 8
Education/Training for Reducing Risk Arising from Spraying Pesticides
Green and Safety Promoters Association, Japan, Yushihiko CHINO

Presentation 9
Harmonising Agricultural and residential land practices within regional Queensland
University of Queensland, Australia, Mark PACE and Gary DORR

Presentation 10
Request for Reconsideration over Japanese ODA Policy on Promoting Pesticide Impregnated Mosquito Met and Domestic Policy on Aerial Spraying of Pesticide from the View Point of Risk Reduction Strategy
Pesticide Action Network Asia & Pacific, Koa TASAKA

Presentation 1, Japan, Atsuko HORIBE

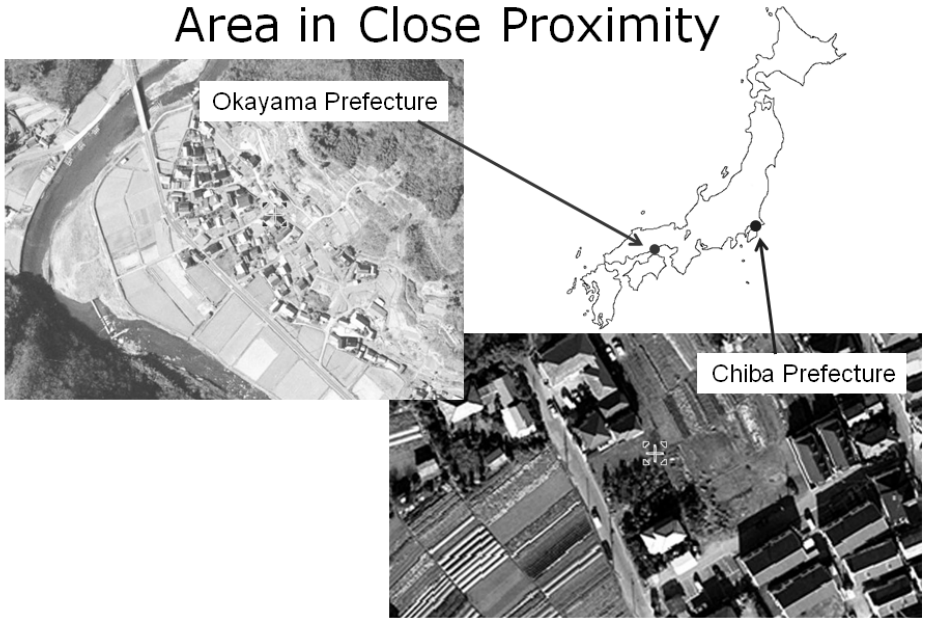
Policy on the Pesticide Uses near/in the Residential Area
- Current Situation -

Atsuko HORIBE
Agricultural Chemicals Office
Plant Products Safety Division
Food Safety and Consumer Affairs Bureau

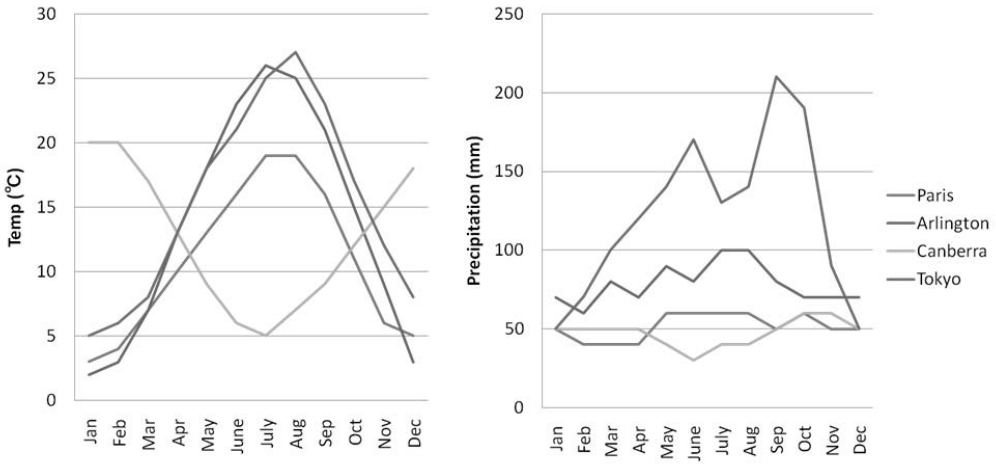
MAFF
Ministry of Agriculture, Forestry and Fisheries

UNIQUE FEATURES OF THE JAPANESE AGRICULTURE

Agricultural Area and Residential Area in Close Proximity



Temperature and precipitation



Spray Methods

	Western Countries	Japan
Volume	Generally Low (10 – 50 L / 10 a)	High (100 – 300 L / 10 a)
Pressure	Low (0.1 – 0.5 Mpa)	High (1.0 – 2.0 Mpa)
Diameter	Big (Av. 120 – over 200 μm)	Small (Av. 70 – 90 μm)
Boom Length	Mostly over 20 m	About 6 – 20 m
Spray Speed	Mostly high speed (around 6 km / h)	Mostly low speed (1 – 3 km / h)
Nozzle Interval	Mostly over 50 cm	30 cm

PESTICIDE USES NEAR/IN THE RESIDENTIAL AREA

Regulations on Use of Pesticides
(Outline)

Agricultural Chemicals Regulation Law

Article 12 (Restriction on the use of agricultural chemicals)

- The Minister for Agriculture, Forestry and Fisheries and the Minister for the Environment shall lay down criteria for the users of agricultural chemicals should comply;
- Users of agricultural chemicals shall not use agricultural chemicals in violation of the criteria.

Ordinance for Standards to be Complied with by the Use of Pesticides

Article 6 (Pesticide use near/in the residential areas)

When using the pesticides near/in the residential area and its neighboring lands, the pesticide user should take necessary measures to prevent the dispersal of pesticides.

"Pesticide Use near/in the Residential Area"
(Notification dated 31st Jan. 2007 by MOE & MAFF)

[Background]

Survey for the controlling pest in the avenue or the park by the local government (MOE, 2005)

Some local governments use pesticides not appropriately.

(Example)

- Periodical use of pesticides without prevalence of pests
- Spraying in a large area
- On-site blending of pesticides

[Purpose]

- To facilitate appropriate use of pesticides
- To avoid adverse effects for human health, animal welfare and environment

[Focus]

- Prefectural governments' advice to pesticide users on appropriate use on pesticides

[Contents]

- Prohibition of periodic use of pesticides without appearance of pests
- Consideration of the condition for spraying e.g. direction of the wind, wind velocity, weather condition, time of the day etc.
- Selection the suitable equipment and type of formulation
- Information-sharing between residents and pesticide users, especially near school, hospital and any other public space
- Importance of appropriate use of pesticides

Activities of Various Sectors

[Central Government]

(MOE & MAFF)

- Organizing seminar for prefectural governments
- Distribution of leaflets
- Promoting appropriate use for pesticides

(MHLW & MAFF)

- Campaign for prevention of injury by pesticides

[Private Sector]

- Organizing seminar
- Advising farmers about appropriate use of pesticides

Seminar in the Hokuriku area

- Hosted by MOE & MAFF (Regional Offices)
- About 80 participants

[Topics]

- Lecture on the Notification (by MAFF)
- Manual for the control of pest and weed trees in/on park and lining the streets (by MOE)
- Case study on pest control (by Kanazawa City)

ISSUES TO BE SOLVED AND VISION FOR THE FUTURE

Issues to be Solved

- Approach to inform relevant authorities of this Notification and methodology
- Resolving troubles and getting mutual understanding between farmers and newer residents
- Development for more effective equipment or formulation causing less drift

Vision for the Future
= Establishing "Japanese Style"

?Difficult Idea?

- Create the Buffer Zone
  → Farm area is too small!!

!Possible Ideas!

- Establish effective information sharing methods
- Development of the strategies for pesticide use near/in the residential area

Check anytime when you use Pesticides.

Detailed information is available at these websites (in Japanese only).

MAFF Homepage

http://www.maff.go.jp/j/nouyaku/index.html

MOE Homepage

http://www.env.go.jp/water/noyaku.html

Thank you for your attention!

Presentation 2, United Kingdom, Paul Y. HAMEY

Health and Safety Executive

HSE

Agricultural pesticides and bystander/resident exposures in the UK

Paul Y Hamey

Chemicals Regulation Directorate

Overview

HSE

- National approach
- Interpretation of EU requirements
  - Authorisation criteria
- Controls on use
- Outcomes
  - Health incidents
  - Stakeholder issues
- Current/future developments

National Approach

- Prior to harmonised EU legislation
- Considered in 1980s by former Ministry of Agriculture Fisheries and Food
  - Highest exposure potential considered to be direct contact with spray drift
  - Simulated spray studies using food dye and volunteers 8 metres downwind
  - Independent scientific advisors
    - Exposure of public not a concern
    - Not routinely assessed

MAFF "Bystander" Studies

EU Directive 91/414/EEC

- Requires exposure assessments for operators, workers and bystanders
  - All compared against systemic reference dose (Acceptable Operator Exposure Level – set to be protective of all groups)
- Directive does not define these groups and no EU guidance on exposure assessment available

UK 91/414/EEC Approach (i)

- Consider bystanders not connected with application, potentially exposed during and after application
- Use data from 1980s volunteer drift studies to identify potential direct exposures to spray drift and produce exposure estimate
  - No authorisation if exposure >AOEL

UK 91/414/EEC Approach (ii)

- Potential indirect exposure to spray drift
  - Assess potential spray drift fallout on lawn adjacent to treated area
    - German drift database
  - Assess potential exposures of child playing on grass
    - US EPA residential SOPs
  - No authorisation if exposure >AOEL

UK 91/414/EEC Approach (iii)

- Potential exposure to pesticide vapour
  - Few relevant UK data on air residues adjacent to application after application
  - Californian EPA Toxic Air Contaminant Program: monitoring of application + 72 hours
    - Highest 24 hour TWA concentration
    - Assess adult and child 24 h exposure
  - No authorisation if exposure > AOEL

Controls on use (i)

- Legal requirements
  - Pesticide specific and general health & safety
- Users have to:
  - Be trained
  - Be certificated if
    - Not applying to own land
    - Born after 31 December 1964
    - (Growing under a crop assurance scheme)
  - Confine application to treatment area

Controls on use (ii)

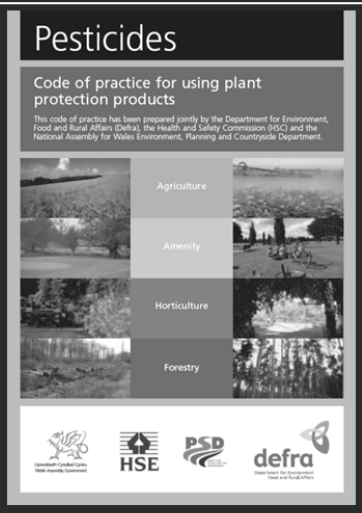
- Where substances hazardous to health are used employers or self-employed must:
  - Consider possible effects on health
  - Assess who might be harmed
  - Identify how to prevent or control exposure
  - Record this assessment

Controls on use (iii)

HSE

Code of Practice

- Advice on legal requirements: training, certification, and health risk assessment
- Drift
  - Affects, causes, and control
  - Acceptable wind speeds
- Neighbours – homes, schools, hospitals etc
  - Extra measures – treat when unoccupied, leave untreated strip? Inform before use?



Outcomes (i)

HSE

- Unprotected bystander exposures less than protected operator exposures
- Official pesticide incident investigations, and data reported by industry: very few confirmed bystander/resident health incidents (2 of local effects in 10 years)

Outcomes (ii)

- Divergent stakeholder views
  - Users
  - Concerned rural residents
    - Genuine illnesses
    - Involuntary exposure
    - No benefit
    - No access to information
      - Past and future spray events

National Farmers Union

Current developments

HSE

- Government funded development of new Bystander & Resident Exposure Assessment Model (BREAM) reports January 2010
  - Exposure to spray drift and vapour
  - Modern spraying practices
  - UK meteorology and air dispersion
  - Exposure of children
  - Includes uncertainty

BREAM & Recent Drift Trials

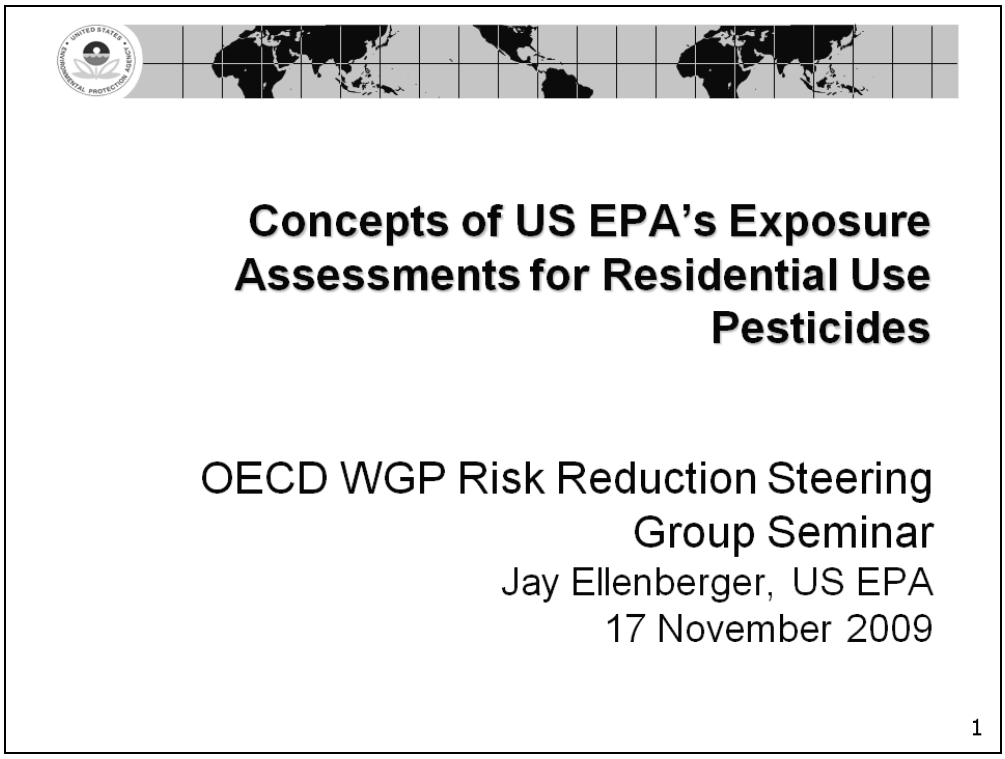
HSE

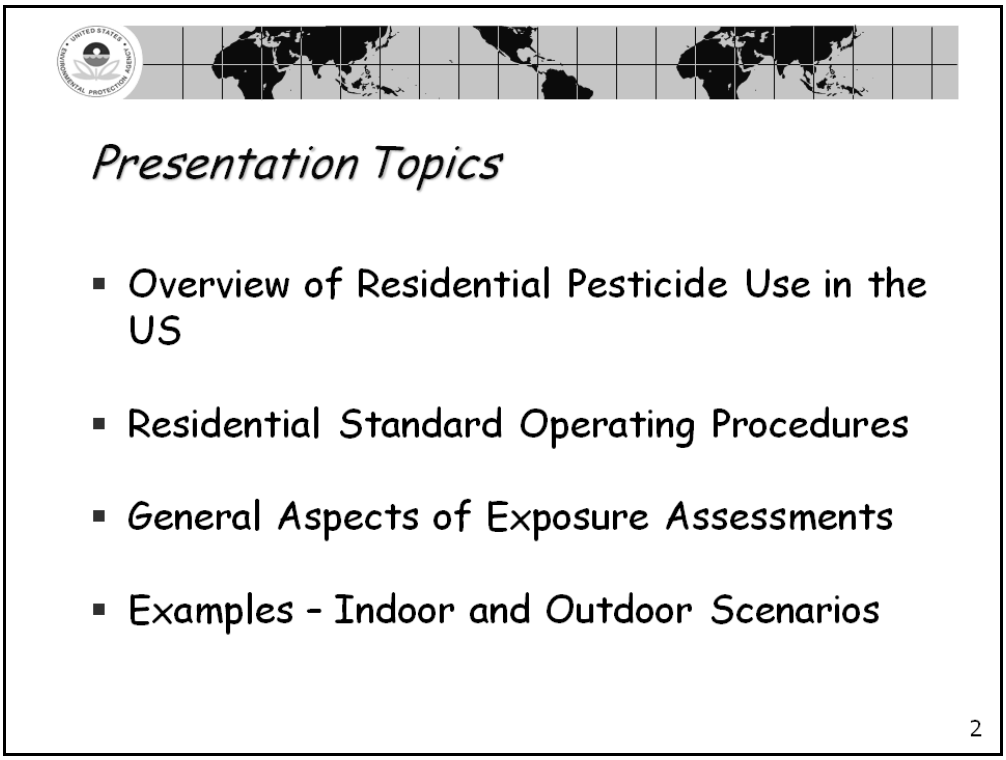
Future developments

- Revision of EU Directive to specifically include “residents” and notification
- UK advisory committees
  - Acute risk assessment?
  - Irritation/sensitization risk from diluted product?
- European Food Safety Authority harmonising exposure guidance

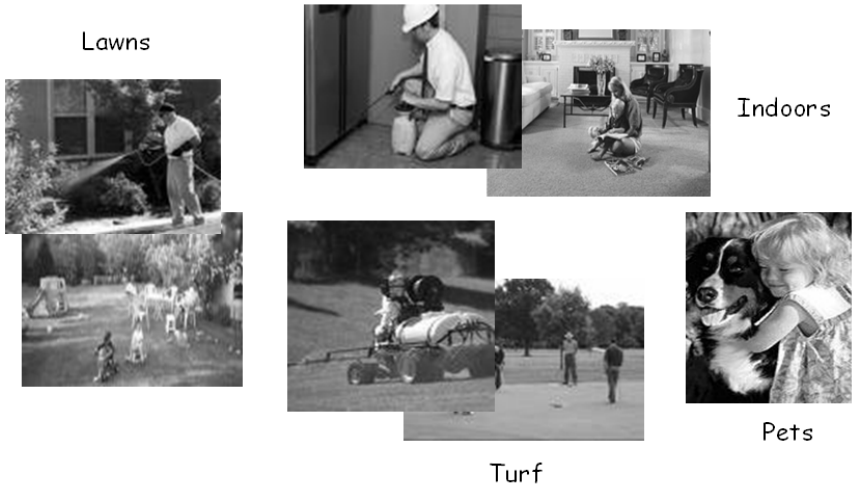
Thank you for your attention

Presentation 3, USEPA, Jay ELLENBERGER





Residential Pesticide Use and Exposures



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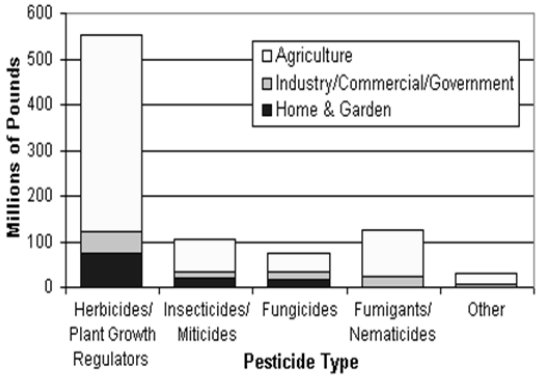
US Residential Pesticide Use Statistics



USEPA, 2001

- 18,525 pest control companies
- 100,000 service personnel
- $ 6.6 billion in sales
- 75 % households use pesticides

4

Occupational vs Homeowner Application?

Issues/Considerations:

- In US no legal distinction of occupational vs homeowner application for residential use pesticides
  - Impracticality of requiring PPE for homeowners and enforcement of use requirements
  - "professional use" is not defined
- Interplay of the a product's risks and risk mitigation measures, marketability & use of the product
  - Somewhat unlike agricultural pesticides; training of farmers, their access to restricted-use pesticides and use of PPE

5

EPA's Risk Assessment & Management Approach

- Determine risks based on proposed use conditions on the product label
  - Margin of Exposure = Tox endpoint / Exposure
  - Application and post-application
- If risks are acceptable without PPE, the product can be registered and marketed for homeowner (non-occupational) use.
- If risks require PPE, engineering controls, or other use requirements, may keep product from homeowner market.

6

Use of Standard Operating Procedures for Risk Assessments of Residential Use Pesticides

- Created in 1997
  - http://www.epa.gov/oscpmont/sap/1997/september/sopindex.htm
- Reviewed by FIFRA Science Advisory Panel (SAP) in 1997 and 1999
- Updated in 2001, New Update in Progress
  - Has been number of years since last update; looking for new data
  - Historically SOPs have taken deterministic approach; moving towards probabilistic assessments

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Another Review of EPA's Updated SOPs

- SAP Review October 2009
  - Adequacy of exposure assessment methods and algorithms
  - Applicability, analysis, and use of available information on pesticide use, activity pattern, and exposure data
  - Process for selecting inputs for assessments
  - Clarity, transparency, and usefulness of the SOPs
- Documents available in EPA-HQ-OPP-2009-0516 at www.regulations.gov
- Expect SAP's opinion December 2009

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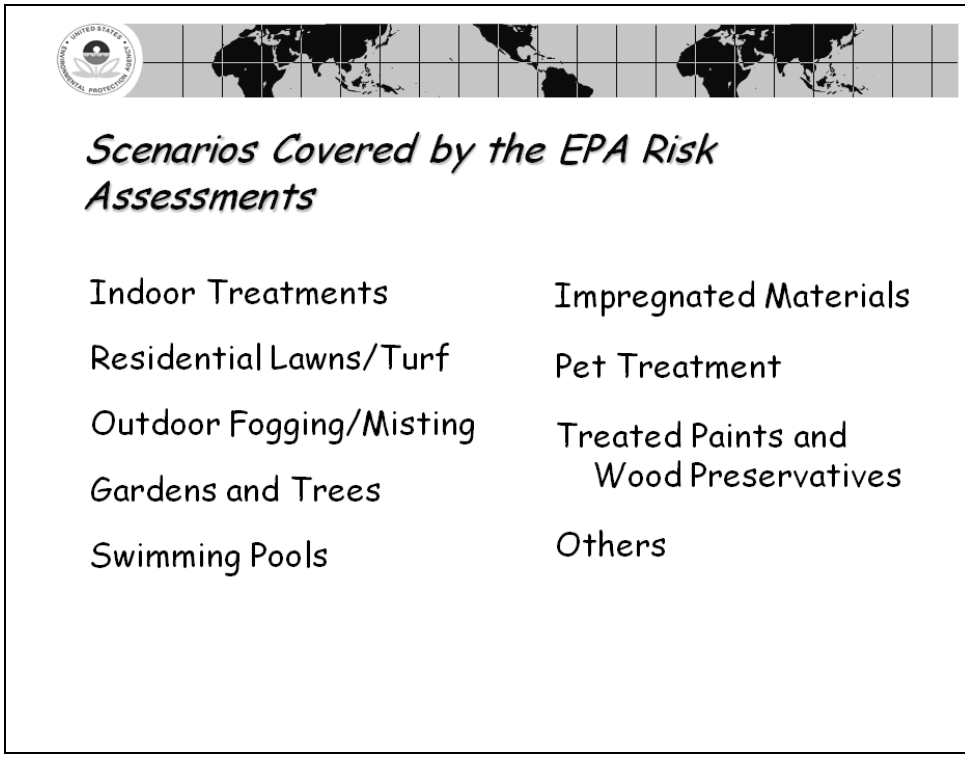
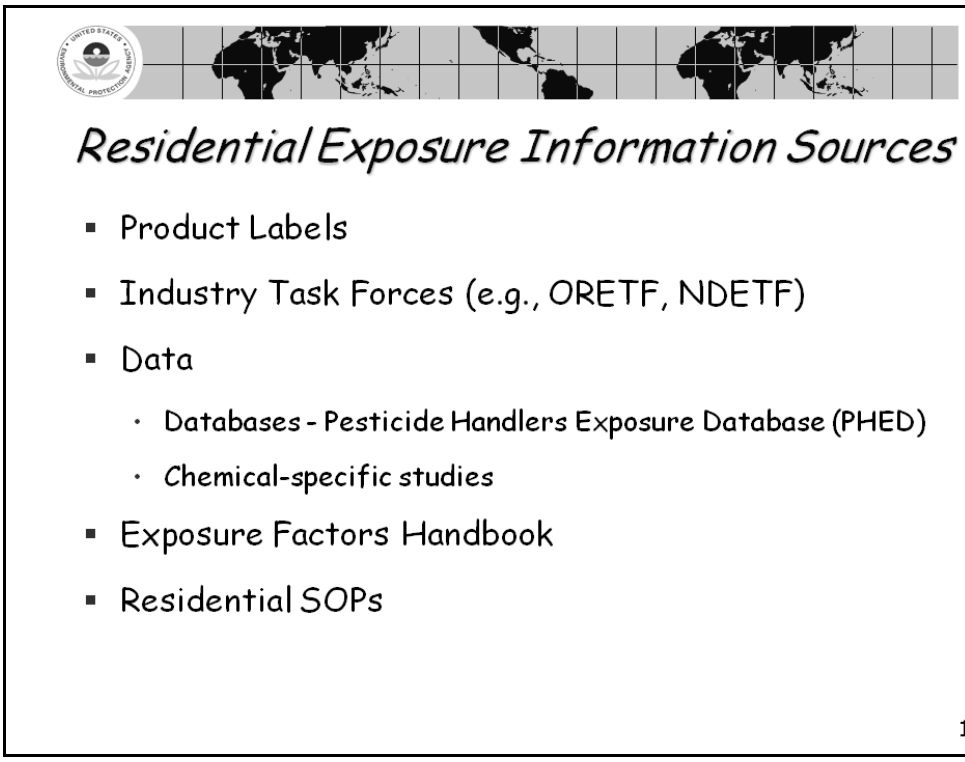

Scenarios Covered by the EPA Risk Assessments
Indoor Treatments
Residential Lawns/Turf
Outdoor Fogging/Misting
Gardens and Trees
Swimming Pools
Impregnated Materials
Pet Treatment
Treated Paints and Wood Preservatives
Others
9


Residential Exposure Information Sources
Product Labels
Industry Task Forces (e.g., ORETF, NDETF)
Data
Databases - Pesticide Handlers Exposure Database (PHED)
Chemical-specific studies
Exposure Factors Handbook
Residential SOPs
10

Residential Pesticide Applications - General Assumptions:

Occupational Use	Homeowner Use
▪ Long sleeves and pants	▪ Short sleeves and short pants
▪ Apply 8 hrs/day -- more pesticides, larger areas treated	▪ Single application -- less pesticide used, smaller areas treated
▪ PPE may be required/used	▪ Applications with hand-held equipment
▪ Application equipment and methods may be more specialized	

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Residential Handler Exposure

- Handler's exposure from mixing, loading, applying the pesticide
- Routes of exposure – Dermal and Inhalation (adults only)
- Unit Exposures taken from various sources (e.g., PHED, ORETF, etc.)
- Amount applied per day or the area treated will differ depending on the exposure scenario and the formulation.

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Handler Exposure

An individual who mixes, load, applies pesticide; comes in direct contact with pesticide.

ADD = (UE x AR x A x DA) / BW

ADD	=	**Average daily dose (mg/kg/day)**
UE	=	Unit exposure (mg/lb ai)
AR	=	Maximum application rate
A	=	Maximum amount applied or area treated
DA	=	Dermal absorption factor (chemical-specific or assume 100%)
BW	=	Body weight (kg)

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Post-Application Exposures

- Exposure to pesticide residues that occurs **after** the pesticide application.
- Same for occupational or non-occupational application.
- *Routes of Exposure:*
  - Dermal exposure – Adults and children
  - Inhalation exposure – Adults and children
    - Negligible?
  - Oral exposure – children
    - Hand-to-mouth
    - Object-to-mouth
    - Incidental soil ingestion
    - Episodic granular ingestion

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Dermal Post-Application Exposure

ADD = (TR x TC x ET x CF x DA) / BW

ADD	=	**Average Daily Dose (mg/kg/day)**
TR	=	Transferable Residue (ug/cm^2) *- residue concentration available for transfer*
TC	=	Transfer Coefficient (cm^2/hr) *- ratio of exposure to residue (ug/hr ÷ ug/cm^2)*
ET	=	Exposure Time (hr)
DA	=	Dermal absorption factor (chemical-specific; if no data available, assume 100%)
CF	=	Conversion Factor (ug to mg)
BW	=	Body weight (kg)

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Incidental Oral Scenarios for Children

- Hand-to-Mouth*
- Object-to-Mouth (toys, grass, etc.)
- Soil Ingestion
- Episodic Product Ingestion (granulars)

* *common to most residential post-application scenarios*

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Hand-to-Mouth Exposure Equation

ADD= (TR x FQ x SA x SE x ET x CF) / BW

ADD = Average Daily Dose (mg/kg/day)
TR = Transferable Residue (ug/cm^2)
FQ = Frequency of activity (events/hr)
SA = Surface area (cm^2/event)
SE = Saliva Extraction factor (%)
ET = Exposure Time (hr/day)
CF = Conversion factor (ug to mg)
BW = Body Weight (kg)

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Residential Indoor Scenarios

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Indoor Handler Exposure

ADD = (UE x AR x A x DA) / BW

Handler dermal and inhalation exposure is based on:

- Method of application (broadcast, crack and crevice or other method of treatment)
- Relevant unit exposures from PHED (UE)
- Application rate (AR)
- Area treated or amount of product handled (A)
- Dermal absorption (DA)

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Indoor Post-Application Exposure

- Dermal
- Hand-to-mouth
- Inhalation
  - Not always assessed -- thought to be negligible because of the low vapor pressure of most pesticides used by homeowners.
  - Considering modeling approaches to this route/pathway

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Indoor Dermal Post-Application

ADD = (ISR x TC x ET x CF x DA) / BW

ADD	=	**Average daily dose (mg/kg/day)**
ISR	=	Indoor Surface Residue (ug/cm^2)
TC	=	Transfer Coefficient (cm^2/hr)
ET	=	Exposure Time (hr)
DA	=	Dermal absorption factor (chemical-specific; if no data available, assume 100%)
CF	=	Conversion Factor (ug to mg)
BW	=	Body Weight (kg)

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Indoor Dermal Post-Application Assumptions (1)

- Transferable residue
  - 5% of deposition rate is available for exposure from carpets
  - 10% of deposition rate is available for exposure from hard surfaces (vinyl, wood)
- Dermal transfer coefficients derived from "Jazzercise"
  - 16,700 cm^2/hr for adults
  - 6,000 cm^2/hr for toddlers
- Duration of exposure
  - 8 hrs for carpets
  - 4 hrs for hard surfaces

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Indoor Dermal Post-Application Assumptions (2)

- Application rate/Deposition
  - Amount of ai per area (e.g., 0.1 mg ai/100 m^2)
  - As a percent spray (e.g., 0.25 or 0.5 % ai spray)
    - Broadcast 0.5 % spray = 15 ug/cm^2
    - Crack/Crevice 0.5 % spray = 12 ug/cm^2
- Body Weight
  - 70 kg for adults
  - 15 kg for toddlers
- Dissipation not incorporated into algorithm

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Indoor Hand-to-Mouth Post-Application Assumptions

- Indoor Surface Residue: same as for dermal (5% from carpets and 10% from hard surfaces)
- Frequency of activity: 20 events/hr for short-term
- Surface area: 20 cm^2
- Saliva extraction factor: 50%
- Exposure time: 8 hrs for carpets, 4 hrs for hard surfaces
- Body weight: 15 kg for toddlers

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Indoor Scenario Uncertainties/Data Needs (Post-Application Exposure)

Transfer coefficient: is the Jazzercise study accurate representation of exposure during typical residential post-application activities?

Percent transfer: are current default values a good estimate of pesticide available for transfer to clothing or skin?

Deposition: how much pesticide is actually available for exposure after a broadcast versus a crack and crevice application?

Hand-to-Mouth algorithm: is assumption of replenishment valid -- that the transferred surface residue on skin is replenished for each hand-to-mouth event in the exposure duration?

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Indoor Scenarios – Future Directions

Handler Exposure Scenario:

- Refine current SOP to distinguish between various application methods and equipment

Postapplication Exposure Scenarios:

- Review open literature and Registrant submitted studies to update/confirm assumptions for transfer coefficient, percent transfer and deposition
- Examine alternative hand-to-mouth algorithms that may better represent actual exposure, with respect to hand residue replenishment assumptions and removal from repeated mouthings

Overall goal: Move from deterministic to probabilistic assessments

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Residential Outdoor Scenarios

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Scenario Description

- Assess exposure for:
  - Handler activities
  - Post-application activities
    - Dermal (playing on turf, mowing, and golfing scenarios)
      - Adults and children
    - Hand-to-Mouth, Object-to-Mouth, Soil Ingestion, Episodic Product Ingestion (Granulars)
      - Children only
    - Inhalation not typically assessed

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Outdoor (Lawns) Handler Exposure

$$\text{Exposure (mg/kg/day)} = \frac{[\text{Unit Exposure (mg/AaiH)} \times \text{(AaiH/day)}]}{\text{Body Weight (kg)}}$$

- Unit Exposure (mg/AaiH): data-derived
- **AaiH/day** = Amount active ingredient handled per day
  - Based on application rate and area treated

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Outdoor Post-Application Dermal Exposure

$$\text{Exposure (mg/kg/day)} = \frac{[\text{TC (cm}^2\text{/hr)} \times \text{TTR (mg/cm}^2\text{)} \times \text{ED (hrs/day)} \times \text{CF}]}{\text{Body Weight (kg)}}$$

- **TC** = Transfer Coefficient (cm^2/hr): data-derived
  - Ratio exposure to residue: ug/hr ÷ ug/cm^2 = cm^2/hr
  - Adults – 14,500 cm^2/hour and Children – 5,200 cm^2/hour
- **TTR** = Turf Transferable Residue (mg/cm^2): data-derived or default of 5% of application rate
- **ED** = Exposure duration
  - 2 hours for playing on turf and 4 hours for golfing
- **CF** = Conversion factor: ug to mg

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Outdoor Post-Application Hand-to-Mouth Exposure

$$\text{Expo. (mg/kg/day)} = \frac{[\text{TTR (ug/cm}^2\text{) x FQ (events/hr) x SE (\%) x ET (hr/day) x CF}]}{\text{Body Weight (kg)}}$$

- **TTR** = Turf Transferable Residue (ug/cm^2): default of 5% of application rate
- **SA** = Surface area of fingers (cm2/event): 20 cm^2
- **FQ** = Frequency of activity (events/hr): 20 events/hr for short-term
- **SE** = Saliva Extraction factor (%): 50%
- **ET** = Exposure Time (hr/day): 2 hrs per day
- **CF** = Conversion factor (ug to mg)

31

Outdoor Post-Application Object-to-Mouth Exposure

$$\text{Exposure (mg/kg/day)} = \frac{[\text{GR (cm}^2\text{/hr) x MR (mg/cm}^2\text{) x CF}]}{\text{Body Weight (kg)}}$$

- **GR** = Grass Residue (ug/cm^2)
  - default of 20% of application rate
- **MR** = Mouthing rate
  - 25 cm^2/day
- **CF** = Conversion factor: ug to mg

32

Outdoor Post-Application Soil Ingestion Exposure

$$\text{Exposure (mg/kg/day)} = \frac{[\text{SR (ug/cm}^2\text{)} \times \text{IgR (mg/day)} \times \text{CF}]}{\text{Body Weight (kg)}}$$

- **SR** = Soil Residue (mg/cm^2)
  - Calculated assuming 100% of application rate is present in top 1 cm^3 of soil
- **IgR** = Ingestion rate (mg/day)
  - 100 mg soil ingested per day
- **CF** = Conversion factor: ug to mg

33

Outdoor Post-Application Episodic Ingestion Exposure

$$\text{Exposure (mg/kg/day)} = \frac{[\text{IgR (g/day)} \times \text{F} \times \text{CF}]}{\text{Body Weight (kg)}}$$

- **IgR** = Ingestion rate (mg/day)
  - 0.3 gram/day dry pesticide (pellets and granules) ingested.
- **F** = Fraction of active ingredient in the granule
- **CF** = Conversion factor: g to mg

34

Outdoor Scenarios – Future Directions

- Select new dermal transfer coefficient from MOSES Lake study
  - Possibly separate for liquids and granulars
- Select new default turf transferable residue percent
- Assess the current hand-to-mouth algorithm
  - Is assumption of replenishment valid (i.e., is transferred surface residue on skin replenished for each hand-to-mouth event)
  - Examine alternative hand-to-mouth algorithms that may better represent actual exposure
- Revise transfer coefficient for mowers
- Revise transfer coefficient for golfers
- Consider guidance from Science Advisory Panel (December)
- **Goal: deterministic to probabilistic**

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Thank you!

Questions?

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Presentation 4, Australia, Donald Alan WARD

Australian Government
Department of Health and Ageing

Public health considerations of bystander exposure to spray drift

Dr Donald Alan Ward
Office of Chemical Safety and Environmental Health
Office of Health Protection
Department of Health and Ageing
Australian Government

Australian Government
Department of Health and Ageing

Overview

- Regulatory framework
- Developing a risk assessment approach
- Risk assessment factors
- Determining a Health Standard
- Evaluating buffer zones
- Dealing with uncertainty
- Questions

Australian Government
Department of Health and Ageing

Regulatory framework

- The Australian Pesticides and Veterinary Medicines Authority (APVMA) must protect human health in relation to pesticide use and labelling.
- The Office of Chemical Safety and Environmental Health performs toxicology assessments for the registration of new active ingredients and new products.
- These assessments currently **do not** include risk assessments for **bystander** exposure to spray drift in relation to the establishment of buffer zones.

Australian Government
Department of Health and Ageing

Reasons for considering bystander exposure to spray drift

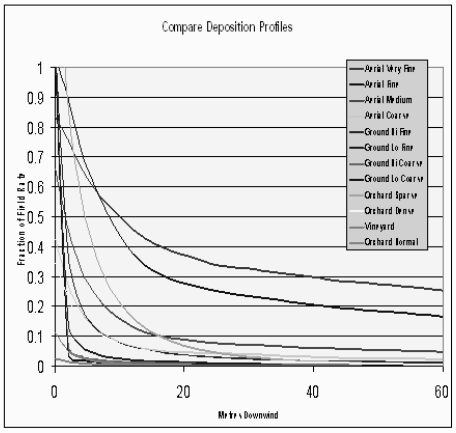
- To assist the APVMA in providing **buffer zone advice** on product labels to protect public health
- To provide tools for rapidly **evaluating adverse experiences** related to spray drift
  - Establish health standards for actives comparable to our Acceptable Daily Intake (ADI) list or a drinking water compliance health value for a pesticide
  - Aid in determining the health implications of exposure to an adverse experience (a drift event)

Australian Government
Department of Health and Ageing

Developing a risk assessment approach

Australian Government
Department of Health and Ageing

The APVMA spray drift deposition model



- Provides data for assessing exposure and determining a buffer zone
- This model does not consider volatilisation drift
- Covers a number of application methods

Australian Government
Department of Health and Ageing

Bystander/exposure scenario definition

- A **bystander** is understood to be defined as a third party to a spraying activity who may come into contact with the chemical through no intent of their own.
- For the purposes of assessing a buffer zone, a worst case scenario could be a toddler playing next to an area being sprayed.

Australian Government
Department of Health and Ageing

Routes of exposure

- Dermal exposure:
  - Transfer from turf
  - Direct dermal exposure
  - Soft toy/bedding exposure?
- Oral, non-dietary exposure:
  - Hand to mouth transfer
  - Soil ingestion
  - Saliva extraction?
- Inhalational exposure?
  - Is there a common dermal/inhalation factor that can be derived from occupation exposure databases?

Australian Government
Department of Health and Ageing

Time and pattern of exposure period

- What time period is most appropriate for calculating exposure?
- What pattern of exposure throughout the year is appropriate?
- Should we consider the environmental half-life for the active ingredient for multiple exposures?

Australian Government
Department of Health and Ageing

Assessing irritation factors

- Products applied without dilution could cause irritation to skin, eyes and/or lungs
- Irritation factors are considered when assessing a product for use in the home and garden
- Are irritation factors being considered as part of bystander exposure assessments elsewhere?

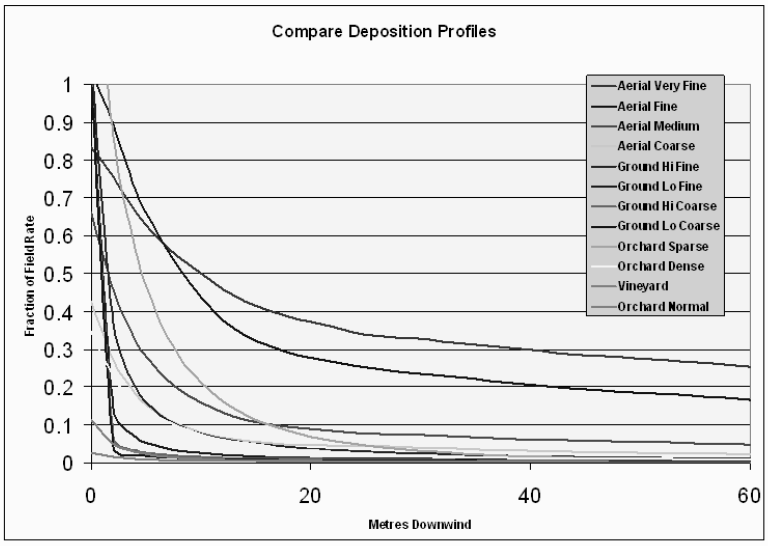
Australian Government
Department of Health and Ageing

Determining a Health Standard

- A Health Standard for spray drift exposure will have to consider toxicological effects of long-term and acute exposure studies
- Possible health standards include:
  - Acceptable Daily Intake (ADI)
  - Acute Reference Dose (ARfD)
  - No Observable Effect Levels (NOEL) from a suitable short-term, repeat dose toxicology studies

Australian Government
Department of Health and Ageing

Evaluating a Buffer Zone



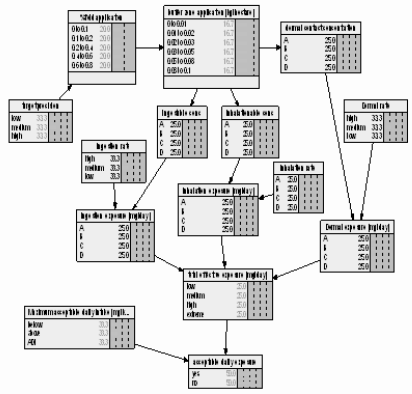
Australian Government
Department of Health and Ageing

Dealing with uncertainty

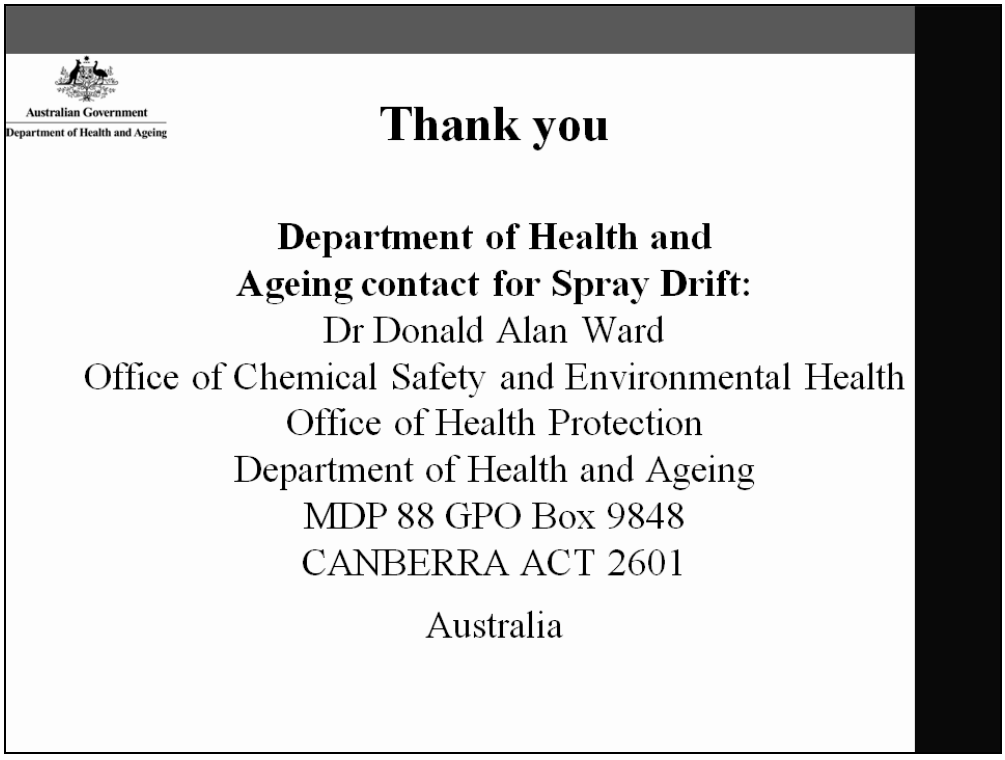
- Uncertainty is pervasive in the concepts and models under consideration:
  - Parameter estimates
  - The physiology of individuals
  - The behaviour of individuals
  - Natural variation in the physical world
  - The way we combine evidence to make a decision

Australian Government
Department of Health and Ageing

One tool for dealing with uncertainty -Bayesian networks



- Deal comprehensively with uncertainty
- Capture the full range of uncertainty from all sources
- Carry the uncertainties through chains of reasoning
- Present a result that communicates our "best estimate" and the range of plausible uncertainty around it


Australian Government
Department of Health and Ageing
Thank you
Department of Health and Ageing contact for Spray Drift:
Dr Donald Alan Ward
Office of Chemical Safety and Environmental Health
Office of Health Protection
Department of Health and Ageing
MDP 88 GPO Box 9848
CANBERRA ACT 2601
Australia

Presentation 5, European Food Safety Authority, Paul HAMEY

efsa
European Food Safety Authority

Preparation of a Guidance Document on Pesticide Exposure Assessment for Workers, Operators, Bystanders and Residents

Mr. Paul HAMEY, expert of EFSA WG on Toxicology of Pesticides
on behalf of Ms Muriel DUNIER-THOMANN of EFSA

Background

efsa
European Food Safety Authority

- In 2006 EFSA run an investigation among MSs to ask the priorities of Guidance Documents
- One of the claims was the operator exposure assessment
- Prioritised by EFSA

Background

- Call to outsource the information gathering and evaluation of the existing models/activities (Art. 36. of of Regulation 178/2002)
- Contractor selected
- Questionnaire, Expert Consultative Meeting with stakeholders, Steering group created
- Preparation of a report
- Report to the Panel
- The report is used as starting document of the opinion

Main contents

- Guidance Document for immediate use. If necessary, this could be revised, as and when new data emerged
- Methods of risk assessment that are currently used, their adequacy
- Level of precaution: up to risk managers to change
- It proposes a revised approach to exposure and risk assessment for operators, workers, residents and bystanders, and gives the underlying rationale

Main contents

efsa European Food Safety Authority

- Risk assessment for those plant protection products where toxicity could arise from acute exposure over one day
- PPR Panel proposed a series of changes to current practices in evaluating exposure to pesticides.
- More harmonised evaluations and more precise estimates of the risk of non-dietary exposure to pesticides.
- A presentable draft opinion was published for a stakeholder consultation in August (6 weeks)

Seminar on Pesticide Risk Reduction Strategies
near/in Residential Areas
Tokyo, Japan
17 November 2009

5

Public Consultation

efsa European Food Safety Authority

Table 1: Comments received on the draft opinion and GD per chapter:

Chapters	Number of comments
0. General comments	22
1 Introduction	1
2. Scope	5
3. Legal requirements	2
4. Current approach	6
5. Adequacy of current methods of risk assessment	2
6. Problems with the current approach to risk assessment	---
6.1. Limited data on exposures	3
6.2. Inconsistency of methods	1
6.3. Variability within and between subjects	3
6.4. Deterministic versus probabilistic risk assessment	1
7. Development of new guidance	2
7.1. Acute risk assessment for operators, workers and bystanders	11
7.2. Methods of exposure assessment	14

Seminar on Pesticide Risk Reduction Strategies
near/in Residential Areas
Tokyo, Japan
17 November 2009

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Public Consultation

efsa European Food Safety Authority

Table 1: Comments received on the draft opinion and GD per chapter (cont.)

Chapters	Number of comments
8. Proposed methods and standard data sets	4
8.1. Operators	12
8.2. Workers	7
8.3. Residents	17
8.4. Bystanders	7
8.5. Scale of use	4
8.6. Allowance for engineering/technical controls and personal protective equipments	7
8.7. Dermal absorption factors	2
8.8. Standard body weights	3
8.9. Breathing rates	6
9. Proposed guidance document	1
Conclusions and Recommendations	7
Appendix a proposed text of guidance document	34
Comments for additional chapters	1
Total number of comments	**186**

Seminar on Pesticide Risk Reduction Strategies near/in Residential Areas
Tokyo, Japan
17 November 2009

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Public Consultation

efsa European Food Safety Authority

Table 2: Comments received on the draft opinion and GD per organizations and countries

Organization	Country	Number
ECPA	BEL	20
IPH	BEL	8
Health Canada - Pest Management Regulatory Agency	CAN	14
National Institute of Public Health	CZE	1
Federal Environmental Agency	DEU	1
Federal Institute of Risk Assessment Berlin	DEU	17
Danish EPA	DNK	1
INSHT/MTIN	ESP	2
Finnish Institute of Occupational Health	FIN	14
AFSSA (Agence Française de Sécurité Sanitaire des Aliments)	FRA	22
BCPC	GBR	1
Nufarm UK Ltd	GBR	11
Health and Safety Executive	GBR	1
Silsoe Spray Application Unit, The Arable Group	GBR	10
JSC International Limited	GBR	6
Toxicology Unit, PCS, Department of Agriculture, Fisheries & Food	IRL	9
The Netherlands	NLD	37
Swedish Chemicals Agency (KemI)	SWE	9
US Environmental Protection Agency, Office of Pesticide Programs	USA	2
Total number of comments		186

Seminar on Pesticide Risk Reduction Strategies near/in Residential Areas
Tokyo, Japan
17 November 2009

8

Definitions of bystander & residents

efsa European Food Safety Authority

- Bystanders are: persons who are located within or directly adjacent to the area where plant protection product (PPP) application or treatment is in process or has recently been completed; whose presence is quite incidental and unrelated to work involving PPPs, but whose position might lead them to be exposed; who take no action to avoid or control exposure.

9

Definitions of bystander & residents

efsa European Food Safety Authority

- Residents are: persons who live, work or attend school or any another institution adjacent to an area that is or has been treated with a PPP; whose presence is quite incidental and unrelated to work involving PPPs but whose position might lead them to be exposed; who take no action to avoid or control exposure; and who might be in the location for 24 hours per day.

10

Overall approach

efsa European Food Safety Authority

- Identify potentially exposed groups
- Consider if significant potential for systemic toxicity from exposure in a single day
- Possible assessments
  - Residents adults and children acute and longer-term
  - Bystander adults and children acute
- Acute exposure – recommend use 95th centiles
- Longer term exposure – recommend use 75th centiles

11

Data used for proposed first tier

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- Bystander exposure to drift
  - UK MAFF studies
- Resident exposure to drift
  - German drift studies
  - EPA Residential SOPs
  - California Toxic Air Contaminant Program
- Entry into treated crops
  - Worker exposure model (adapted)
  - EPA Residential SOPs

12

Expected timelines

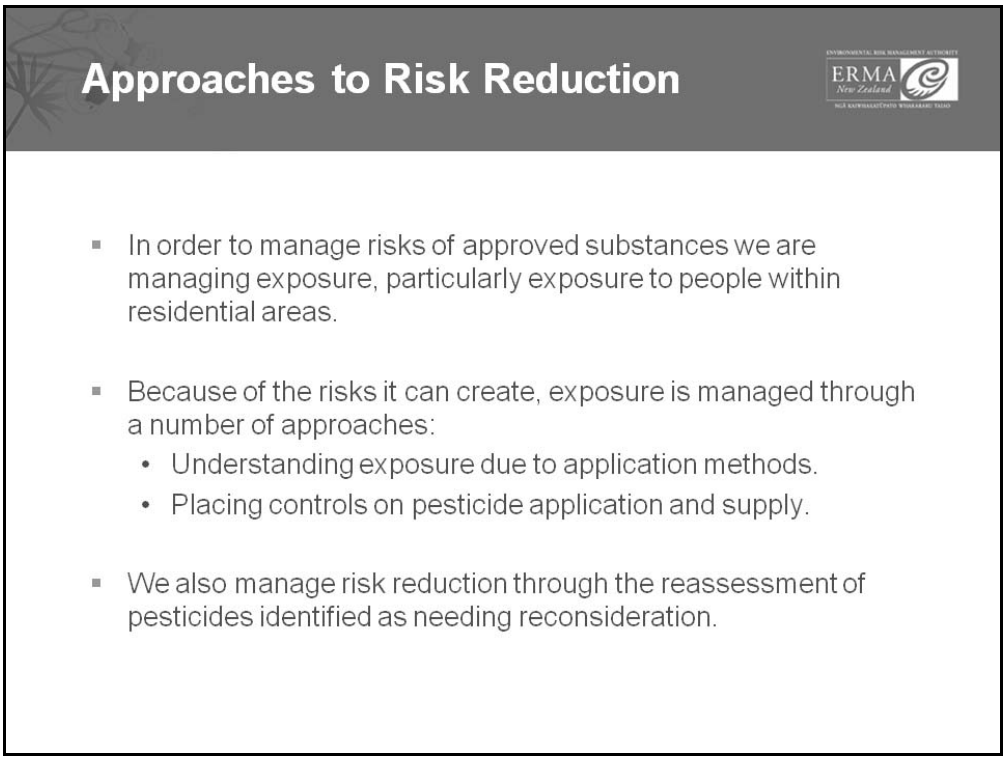
efsa
European Food Safety Authority

- The comments received during public consultation will be considered for the final text.
- The opinion expected to be adopted at the Plenary Meeting in December 2009.
- The Guidance Document (Annex to the opinion) will be discussed with risk managers. The adopted version will not necessarily be the final, as the post-consultation discussion might still be ongoing

efsa
European Food Safety Authority

Thank you for your attention

Presentation 6, New Zealand, Warren HUGHES



Understanding exposure

- Modelling-
  - BBA operator exposure model.
  - UK Chemical Safety Directorate models for re-entry, bystander exposures.
  - GENEEC2 (aquatic exposure assessment model).
- Work on improved controls-
  - ERMA NZ aims to improve modelling capability so that, if appropriate, scientifically robust buffer zones and re-entry intervals can be applied to more effectively manage exposure.

Managing Pesticide Application

- Along with labelling controls, a number of pesticides are required to be under the control of an Approved Handler with required expertise.
- Approved Handlers (AH) must demonstrate a knowledge of-
  - Hazard classifications
  - Adverse effects of hazardous pesticides
  - Emergency measures
  - Controls imposed by government legislation
  - Operating equipment and protective clothing
- NZS8409:2004 & 'Growsafe'- Management of Agrichemicals
- http://www.ermanz.govt.nz/resources/publications/pdfs/pah.pdf

Managing Pesticide Application and Supply

- AH needed at point of use when:
  - Pesticide is ecotoxic and widely dispersed.
  - Pesticide has mod- high human toxicity.
  - Commercial contractor is applicator.
- AH at point of sale AND point of use needed when pesticide is highly toxic.
- Highly toxic pesticides also need to be 'Tracked'- 'No certificate, no sale' policy.
- http://www.ermanz.govt.nz/resources/publications/pdfs/pahtr.pdf

Reassessments

- Where the risks, costs and benefits associated with an approved substance are reconsidered.
- As a result conditions placed on the approval may change, or the approval may be withdrawn.
- Options for time limited approvals.
- Examples of reassessments to date:
  - Endosulfan
  - Methylarsinic Acid
  - Azinphos Methyl
  - Hydrogen Cyanamide

A New Zealand Experience

- Reassessment of Hydrogen Cyanamide undertaken in 2006.
- The Kiwifruit industry interfaces with residential areas, hence there is high potential for residential exposure.
- Spraying occurs over a small timeframe (6 weeks), is used by a limited population (2700 growers), with 80% of application occurring in one region (Bay of Plenty).
- Spraying generates a number of public complaints and media coverage each year regarding spraydrift and non-notification.
- http://www.ermanz.govt.nz/news-events/focus/ch2n2.html

Hydrogen Cyanamide Reassessment

- The reassessment concluded that the benefits of use outweigh the risks (adverse effects).
- Significant focus was placed upon potential technological change, notification requirements, and increased public awareness of the substance's use.
- Trials of new 'air inclusion nozzles' have shown spraydrift reductions of up to 80%, and have been adopted by at least 70% of spray contractors.
- Number of complaints have almost halved in 3 years since reassessment and change in controls.

Challenges with Managing Pesticide Application and Supply

- Variability within private training programs for certification.
- Variability regarding enforcement, and difficulties in substantiating spraydrift complaints.
- Difficulties in obtaining exposure information- locations of, and quantities sprayed.
- Achieving 'buy-in' from users- compliance costs and practicalities need to be considered.
- How to create value and simplicity in adhering to regulations and best practices.

Presentation 7, CropLife International, Bernhard JOHEN and Keith JONES

CropLife INTERNATIONAL

Use of Pesticides near and in Residential Areas: A Special Case?

Bernhard Johnen
Keith Jones

Invasive/pest species in urban areas

- Japanese Knotweed - UK
- Imported in 19th century
- Roots spread up to 7m
- Spreading plant is a criminal offence
- Biological and mechanical control ineffective; Herbicide sprays

Integrated Vector Management

- Integrated Vector Management – Malaria & Dengue Control, Avian virus
- Direct control
- Residual spraying
- Mosquitoes rest in long grass etc. - cut grass or treat with herbicide

Production areas amongst housing

Almeria, Spain

Salisbury, UK

Maintenance of recreational areas (golf, parks, playing fields)

Pesticide Users: Who are they?

- Farmers
- Private contractors
- Local Government Employees

- All should receive appropriate training in accordance with 'use context'

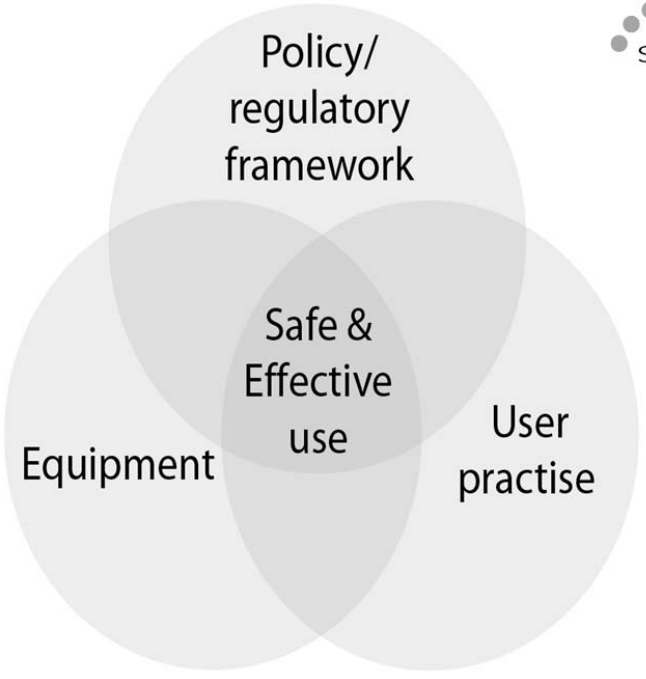
Pesticide Use Context (PUC)

Stewardship

There are many elements influencing the outcome of pesticide use

- International Conventions e.g. Stockholm
- Registration systems
- Production standards e.g. GLOBALGAP
- Equipment design
- Specifics of the environment in the use area
- Attitudes and awareness of users
- Availability of personal protective equipment (PPE)
- User knowledge and skills

Stewardship



Addressing the key elements in the PUC

Stewardship

Regulatory/Policy domain

- Appropriate products made available
- Access to illegal/counterfeit products prevented
- Container management systems in place
- Policies to promote IPM/ICM
- Policies to support users thru info, access to appropriate products etc
- Markets encouraged through infrastructure, financial systems, information access

Addressing the key elements in the PUC

Stewardship

Equipment domain

- Safe and appropriate application equipment available
- Spare parts available
- Practical PPE available that is appropriate for conditions of use

Addressing the key elements in the PUC

Stewardship

User practise – building capacity

- Knowledge - newspapers, books, posters, leaflets, radio, television as well as formal teaching
- Skills – participatory/practical training, possible certification
- Positive attitudes - best tackled by longer term information and communication campaigns via multiple media and, as a result, is often omitted

Proper analysis of management options

Stewardship

- Which provides the appropriate level of control?
- Which has a greater risk, e.g. targetted spraying vs. high dose point sources; herbicide vs burning in high risk areas (wildfires)?

- Benefit vs True Risk needs to be understood by policy makers and users (i.e. a comprehensive 'use assessment' is required)

Training

Stewardship

- Guidelines available (Pesticide handling and use, IPM, transport, storage)

Training

Stewardship

Conclusion

Stewardship

- Pesticides are required to control pests near and in residential areas
- Should only be used when necessary – alternatives considered, but chemicals often can be the least risky tool
- Users should be trained and, as appropriate, require certification (refresher training, re-enforcement)
- Practices should reflect the 'use context'
- No different from the general strategy for stewardship

Stewardship

Thank You

Presentation 8, Green and Safety Promoters Association, Japan, Yoshihiko CHINO

Education/Training for Reducing Risk Arising from Spraying Pesticides

Yoshihiko CHINO
Chief, Pesticide Safety Counseling Division
Green and Safety Promoters Association

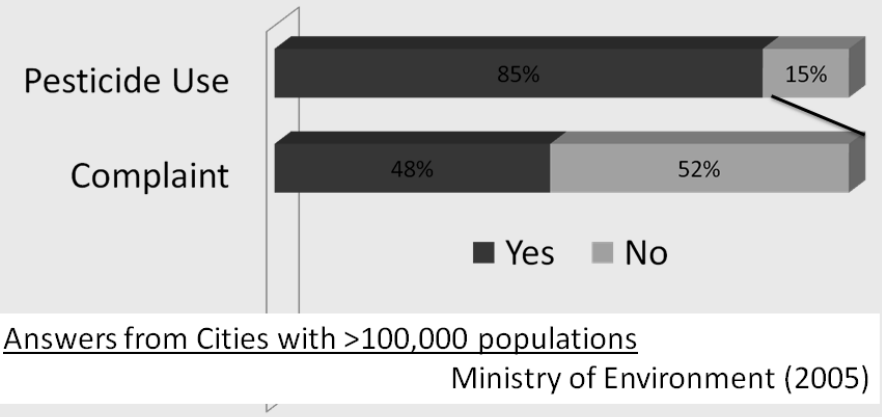
1

Pesticide Spraying near the Residential Area

Risk arising from drift to residents, pedestrians and automobiles is of concern.

2

Relationship between Pesticide use and Complaints



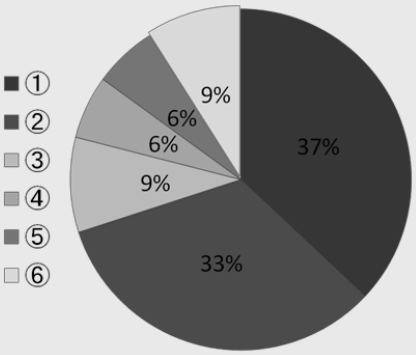
Answers from Cities with >100,000 populations
Ministry of Environment (2005)

3

Types of Complaints

(Summery of 3 most frequent answers)

Contents	Answers	No.
Stain on hanged laundry or cars	118	①
Health Concern	107	②
Bad odors	28	③
Harm to the pets etc.	19	④
Damage to human health (Hospitalization)	18	⑤
Others	30	⑥



4

Education for Appropriate Use of Pesticides near the Residential Area

1. Preparing the manual for instructors
2. Taking the initiative by the facilities of a local government
3. Education of the users and instructors

5

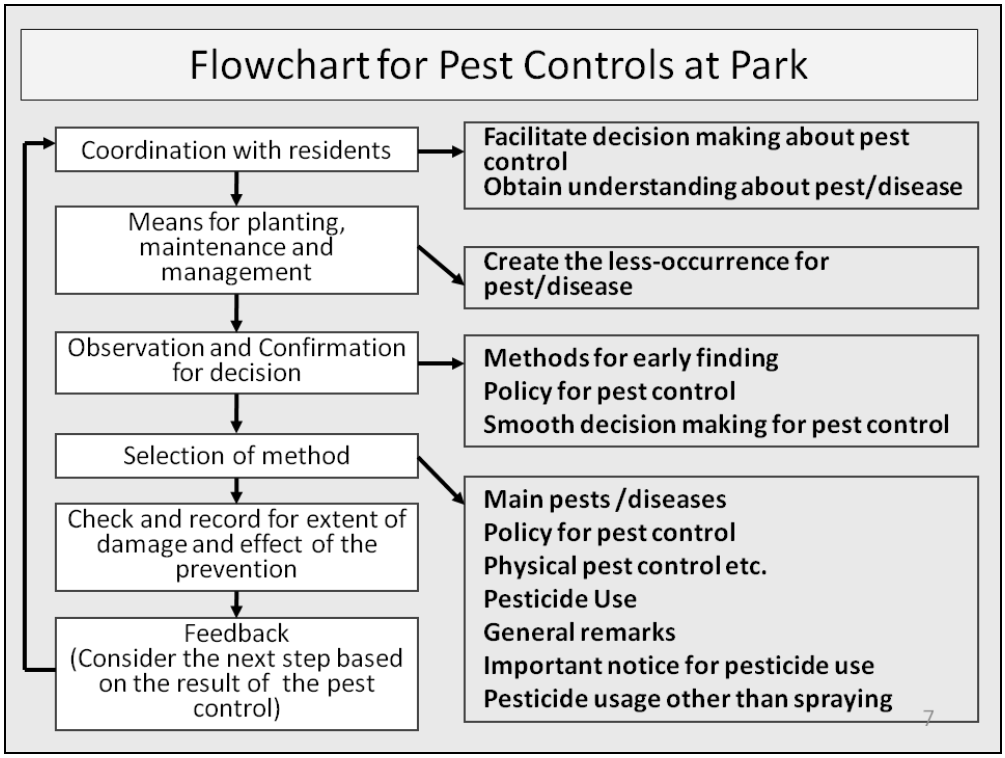
Manual for Instructors

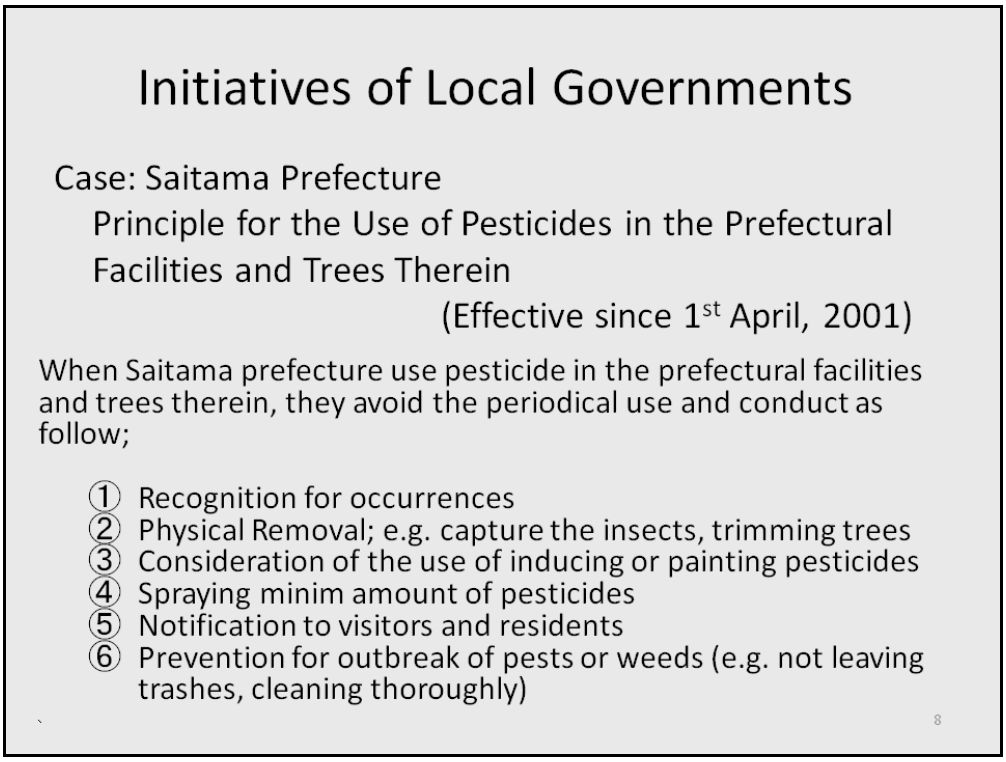
- for Risk Reduction from Pesticide Spraying -

Manual for the Drift for ground pest control (2005)
Japan Plant Protection Association
http://www.jppa.or.jp/information/tecinfo/data/doriftmanual%20s.pdf

Manual for the Pest and Weed Control on the Park or Trees lining a street (2008)
Ministry of Environment
http://www.env.go.jp/water.nouyaku/hisan_risk/manual1.html

6


Flowchart for Pest Controls at Park
Coordination with residents
Means for planting, maintenance and management
Observation and Confirmation for decision
Selection of method
Check and record for extent of damage and effect of the prevention
Feedback (Consider the next step based on the result of the pest control)
Facilitate decision making about pest control
Obtain understanding about pest/disease
Create the less-occurrence for pest/disease
Methods for early finding
Policy for pest control
Smooth decision making for pest control
Main pests /diseases
Policy for pest control
Physical pest control etc.
Pesticide Use
General remarks
Important notice for pesticide use
Pesticide usage other than spraying
7


Initiatives of Local Governments
Case: Saitama Prefecture
Principle for the Use of Pesticides in the Prefectural Facilities and Trees Therein
(Effective since 1st April, 2001)
When Saitama prefecture use pesticide in the prefectural facilities and trees therein, they avoid the periodical use and conduct as follow;
① Recognition for occurrences
② Physical Removal; e.g. capture the insects, trimming trees
③ Consideration of the use of inducing or painting pesticides
④ Spraying minim amount of pesticides
⑤ Notification to visitors and residents
⑥ Prevention for outbreak of pests or weeds (e.g. not leaving trashes, cleaning thoroughly)
8

Seminar for pesticide users

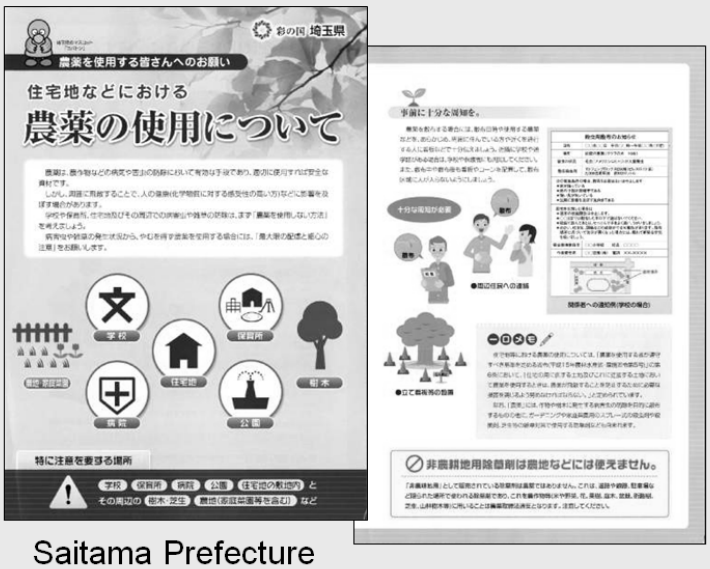
9

Guidance for Farmers Given by the Agricultural Extension Worker

10

Leaflet for education
(by MOE & MAFF)

Leaflets
(by local governments and related organization)



Saitama Prefecture

Ehime Prefecture

Japan Crop Protection Association

13

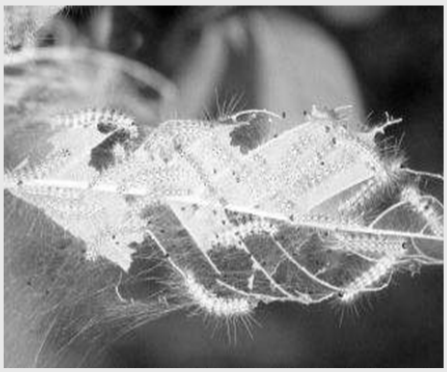
Instructions for Tree Protection

1. Early pest control (Timing etc.)
2. Giving priority to physical pest control
3. Basics for spraying pesticides (wind, spraying method etc.)
4. Equipment (incl. nozzle)
5. Drift-less pesticides
6. Communication with residents
7. Enclosure of working site

14

Early Discover and Early Control

Fall webworm (*Hyphantria cunea*)



Before dispersion of caterpillar (suitable season)

15

Progress for outbreak of Fall webworm (*Hyphantria cunea*)

図1 アメリカシロヒトリの発生経過：2化性の場合

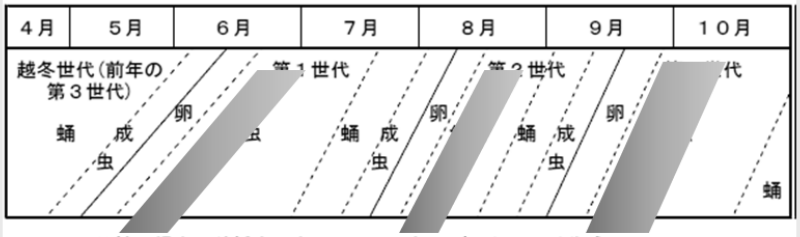


図2 同：3化性の場合（前橋市江木町：96～06年のデータにより作成）

Suitable season for elimination

Guidance for elimination (by Gunma pref.)

16

Early Discover and Early Control

Tea tussock moth (*Euproctis pseudoconspersa*)

Just before dispersion of caterpillar

Easy to control

Dispersion→Increase damage

Difficult to Control

Rely on Pesticides

17

Basic Operation for Spraying

Putting the nozzle close

The closer the nozzle is to tree, the less drift to near area.

18

Check Wind Direction & Velocity by Using Tape

Attach the tape (50 cm length) at the top of the pole

Calm or light wind

Stop spraying when the tape stays just beside

19

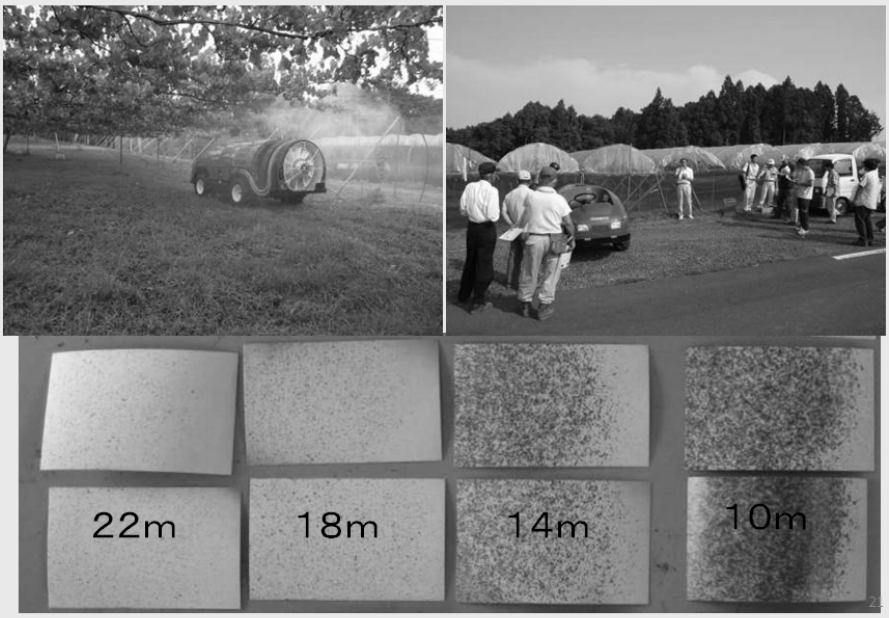
Demonstration for Drift-less Nozzle

Drift-less nozzle

Generally used nozzle

20

Demonstration for Drift-less Nozzle with SS



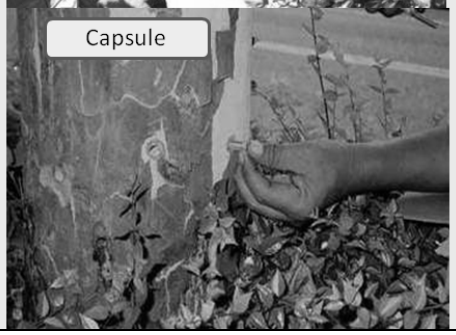
Comparison of Micrograniule and Dust Formulation DL

Micrograniule

Dust Formulation 5DL

Provided by KUMIAI CHEMICAL INDUSTRY Co., Ltd.

Pesticide Usage for Less Drifted



For the small shrub, use granule, soil treatment formulation

23

Prevention of Drift from Farmland to Residential Area

Net for prevention of drift at fruit farm (pear)

Use for barrier crops (e.g. sorghum)

24

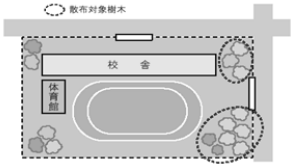
Information for Residents

殺虫剤散布のお知らせ	
日時	○○月××日　午前▲▲時～午前△△時（予定）
場所	校庭東側（サクラ10本）
害虫の状況	・毛虫（アメリカシロヒトリ）が大量発生 ・毒毛虫（チャドクガ）が発生（危険）
散布殺虫剤	ディプテレックス乳剤（DEP:トリクロルホン） 1500倍希釈液　約100リットル ★有機リン系（散布液を浴びないよう注意）

次の気象条件の場合、散布を延期あるいは中止
◆雨が降っている　◆雨の予報が高確率である
◆強い風が吹いている　◆近隣に影響を及ぼす風向である

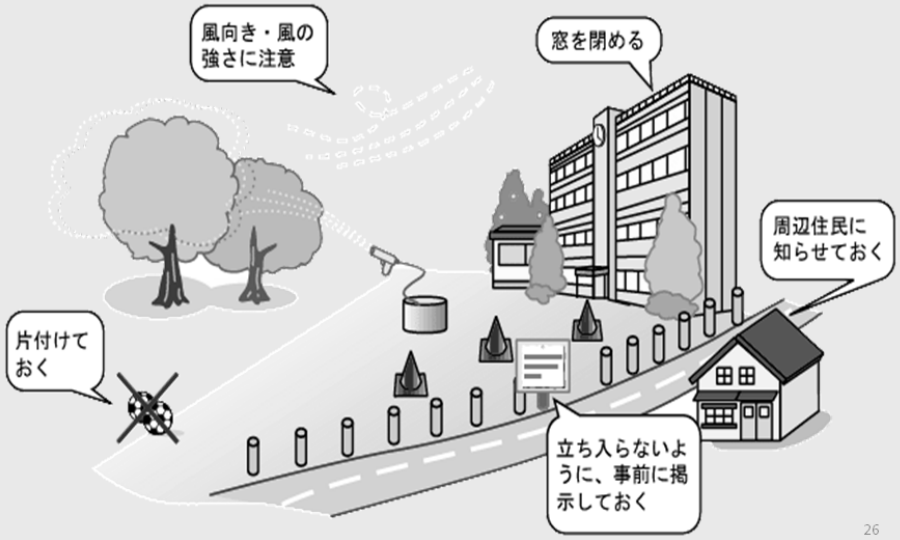
散布を実施した場合
★週末の校庭開放は中止します
★□□日までは散布した木の下で遊ばないでください
★校庭で遊んだあとは、せっけんで手を良く洗い、うがいをしましょう
★散布場所に近づいて気分が悪くなった場合（めまい、吐き気など）には、離れて新鮮な空気を吸いましょう

安全管理責任者	▲▲小学校　校長　○○　○○
作業担当者	○○造園（株）　電話 XXX-XXXX



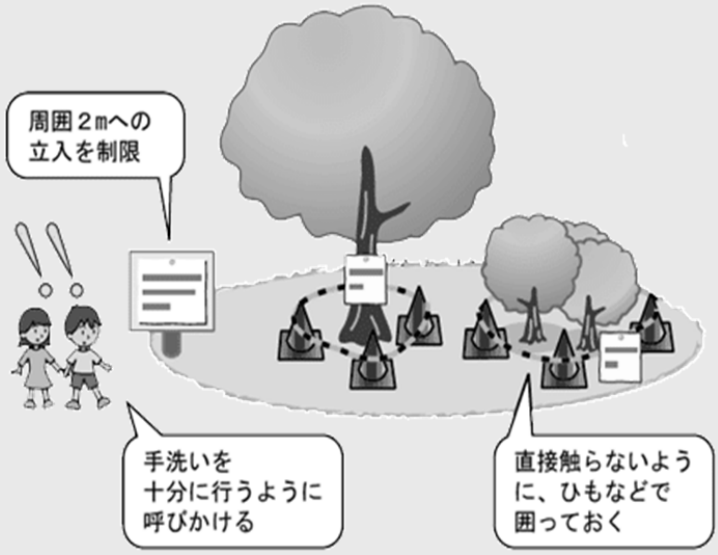
25

When you spray pesticide, you should be careful as well as and inform your neighbors to pay attention to…



26

In the place where infants play, you should…



27

Installation of the Sign after Spraying

28

Communication for Residents

Website on Katsushika City – "Occurrence of pests in trees"

Thank you for your attention.

Presentation 9, University of Queensland, Australia, Mark PACE and Gary DORR

Harmonising Agricultural and Residential Land Practices within Regional Queensland

For The

OECD RRSG

Prepared by Mr Mark Pace (Masters Rural Sys Man)
Director G-VEC
&
Dr Gary Dorr Senior Research Officer Centre for Pesticide Application and Safety (CPAS)

Faculty of Natural Resources Agriculture and Veterinary Sciences
University of Queensland

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Overview

- South East Queensland (SEQ) is Australia's fastest growing region. By 2031, its population is expected to grow from *2.8 million to 4.4 million people*. The region covers 22,890 square kilometres, stretching 240 kilometres from Noosa in the north to the Queensland-New South Wales border in the south, and 160 kilometres west to Toowoomba.
- The SEQ region includes land covered by 11 city and regional local governments. Its regional landscape is a rich mix of bushland and beaches, ranges and paddocks, rivers and lakes.
- SEQ's population is heavily urbanised and is generally concentrated along the coast between Noosa and Cooloongatta.

http://www.dip.qld.gov.au/seq

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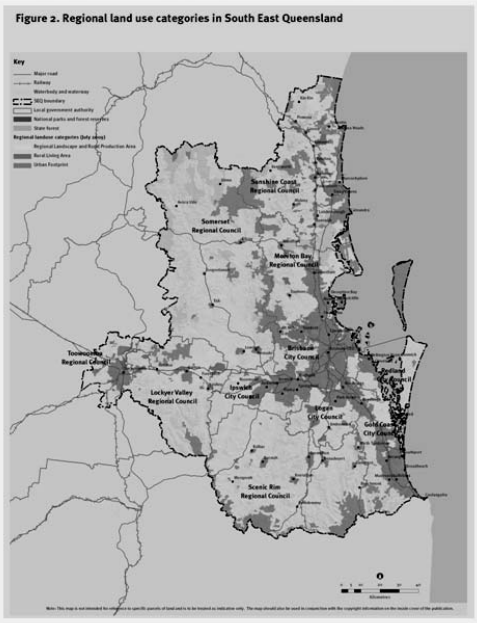

South East Queensland Regional Plan 2009–2031

http://www.dip.qld.gov.au/seq

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Qld Government Policy

- *"The Queensland Government considers that good quality agricultural land is a finite national and State resource that must be conserved and managed for the longer term. As a general aim, the exercise of planning powers should be used to protect such land from those developments that lead to its alienation or diminished productivity".*
- Good quality agricultural land is generally at least of regional significance, and its protection may require regional coordination.

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Qld Government Policy

- Measures that can be applied to conserve these lands and facilitate agriculture on good quality agricultural land are outlined in the State Planning Policy (SPP) 1/92 *Development and Conservation of Good Quality Agricultural Land*
- Australia has a limited supply of good quality agricultural land, with only 1-2% of land supporting highly productive agriculture.

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Qld Government Policy

- The *Workplace Health and Safety Act 1995* (the Act) places obligations on persons conducting a business or undertaking, to ensure other persons or '*by Standers*' are not exposed to risks to their health and safety arising out of the conduct of the business or undertaking.
- Spray drift from an application of agricultural chemicals has the potential to adversely affect the health and safety of persons or a *By Stander* in non-targeted areas.

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Qld Frameworks of Law

The Act does not apply to residential property owners, but they are still potentially entitled for compensation under *Common Law* if adverse impacts on the health of their neighbours or '*By Standers*' is caused by spray drift of agricultural chemicals originating from applications to their gardens or yards.

To prove such a case, it must be shown that the defendant had a *duty of care* to the plaintiff, that they breached that duty, that the act in question was the cause of the damage suffered, and that the plaintiff suffered a loss as a result.

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Conflict of Best Management Practices

Residential development may not be compatible with agricultural land uses. Conflict may arise due to;

- redirection of water flows,
- transport routes near dwellings,
- odour, noise, machinery,
- chemical problems i.e. drift from farming practices.

This conflict may extend to misgivings between rural residential landholders, hobby farmers and traditional farmers.

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Buffer areas
Minimising conflict between agricultural and residential areas

Department of Natural Resources and Water (NRW) fact sheet L49

Planning Guidelines: Separating Agricultural and Residential Land Uses

Planning Guidelines: The Identification of Good Quality Agricultural Land

Department of Environment and Resource Management www.derm.qld.gov.au

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Planning principles

1. When preparing planning schemes, local governments should avoid, as far as practicable, zoning land for housing in close proximity to agricultural land. Where this is not possible, mechanisms such as buffer areas should be used to minimise conflicts.
2. Buffer areas should be planned on the basis of the agricultural land use which is reasonably likely to be practised and has the potential to have most impact on adjacent land uses, regardless of current use.
3. To protect the prior rights of agricultural producers to practise agriculture on rural land, buffer areas should be located within the site being developed for residential purposes, and be provided/funded by the proponent of that development.
4. Where conflicts already exist between agricultural and residential land uses, mechanisms including mediation, source controls and public education should be implemented.

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Planning principles and Policy

- **Local government planning schemes should aim to minimise the potential for locating incompatible uses adjacent to agricultural operations in a manner that inhibits or constrains normal farming practice.**

The published guideline *Separating Agricultural and Residential Land Uses* outlines protective measures for farmland and conflicting land uses. The favoured mechanism is to set aside an area of land (a buffer) within the new development to minimise conflict such as odour, noise and chemical spray drift. A buffer should be the minimum width required to substantially ameliorate the impacts of the particular agricultural practices that are likely to apply.

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Objectives of buffer areas

1. To protect the use of reasonable and practicable farming measures that are practised in accordance with the Environmental Code of Practice for Agriculture and associated industry-specific guidelines.
2. To minimise scope for conflict by developing, where possible, a well-defined boundary between agricultural and residential areas as opposed to interspersing agricultural and residential areas.
3. To minimise the impacts of residential development on agricultural production activities and land resources.
4. To minimise the potential for complaints about agricultural activities from residential areas.
5. To provide residents with acceptable environmental conditions in residential areas that are located adjacent to agricultural production areas.

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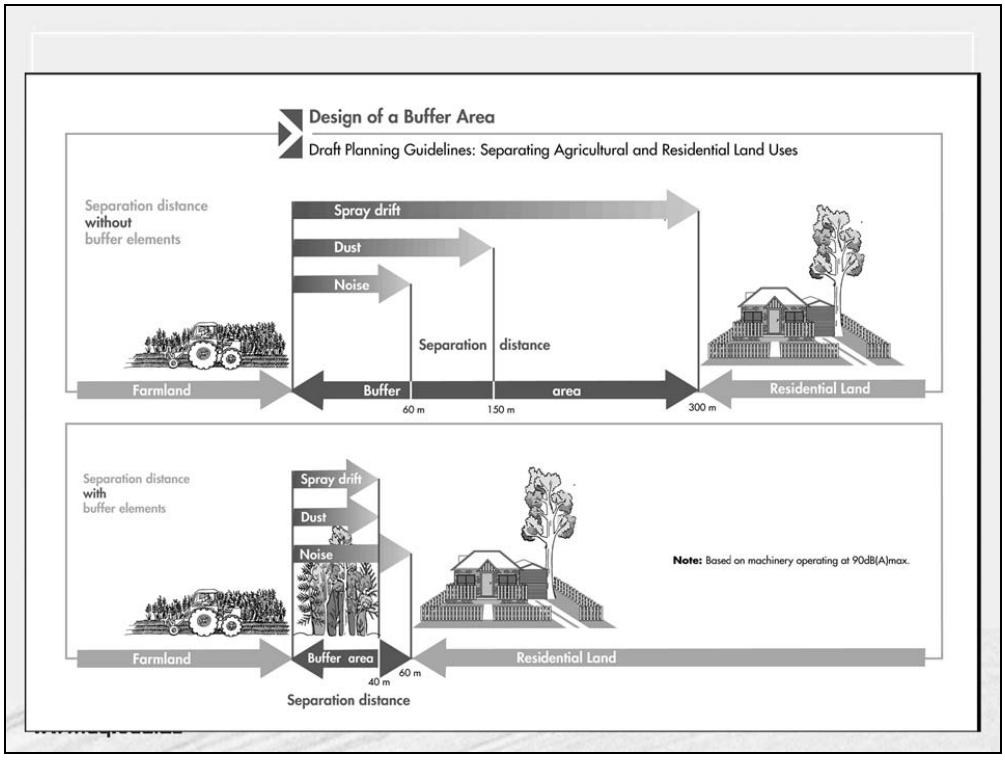
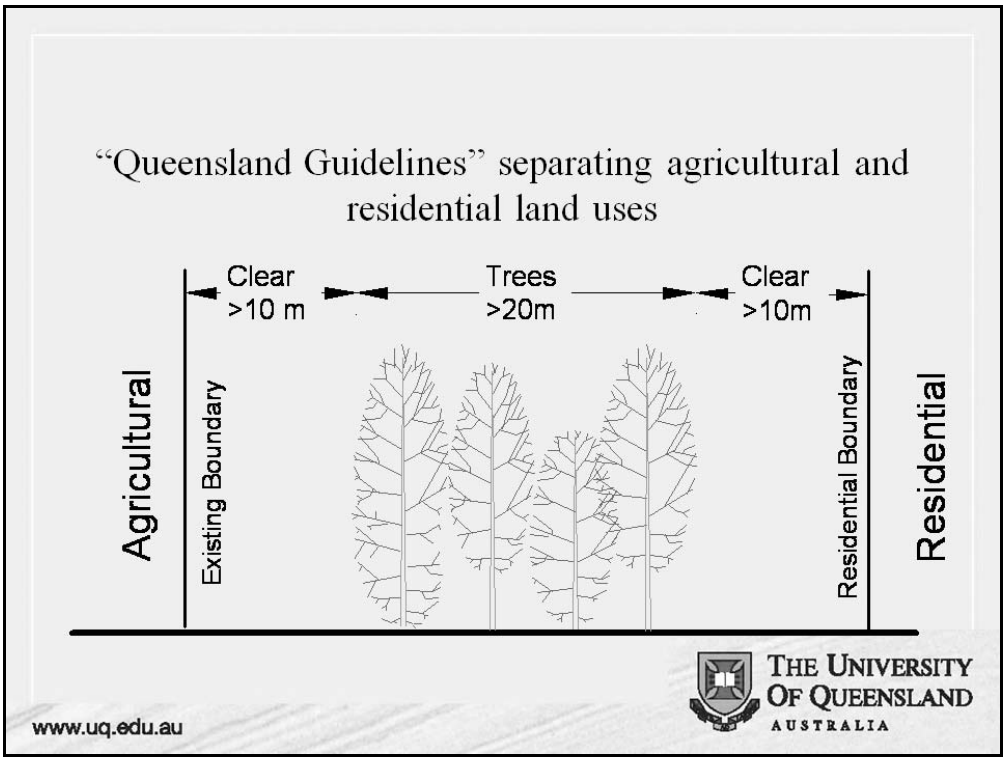

Design of a Buffer Area
Draft Planning Guidelines: Separating Agricultural and Residential Land Uses
Separation distance without buffer elements
Spray drift
Dust
Noise
Separation distance
Farmland
Buffer area
Residential Land
60 m
150 m
300 m
Separation distance with buffer elements
Spray drift
Dust
Noise
Note: Based on machinery operating at 90dB(A)max.
Farmland
Buffer area
Residential Land
40 m
60 m
Separation distance


"Queensland Guidelines" separating agricultural and residential land uses
Clear >10 m
Trees >20m
Clear >10m
Agricultural
Existing Boundary
Residential Boundary
Residential
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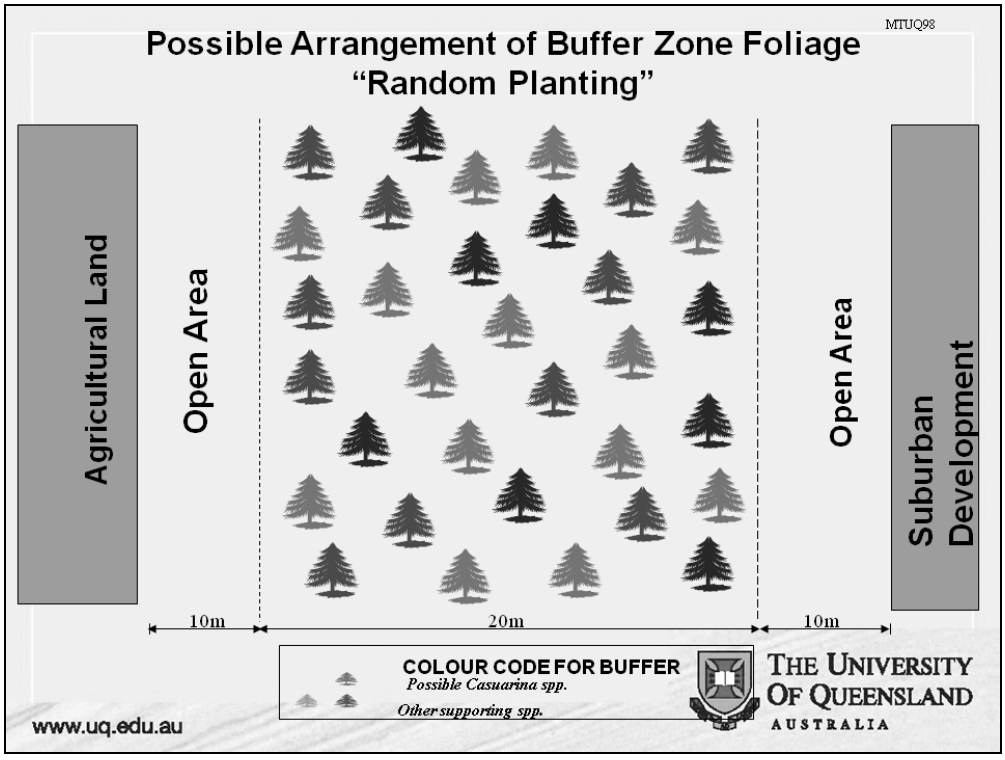
MTUQ98
Possible Arrangement of Buffer Zone Foliage
"Random Planting"
Agricultural Land
Open Area
Open Area
Suburban Development
10m
20m
10m
COLOUR CODE FOR BUFFER
Possible Casuarina spp.
Other supporting spp.
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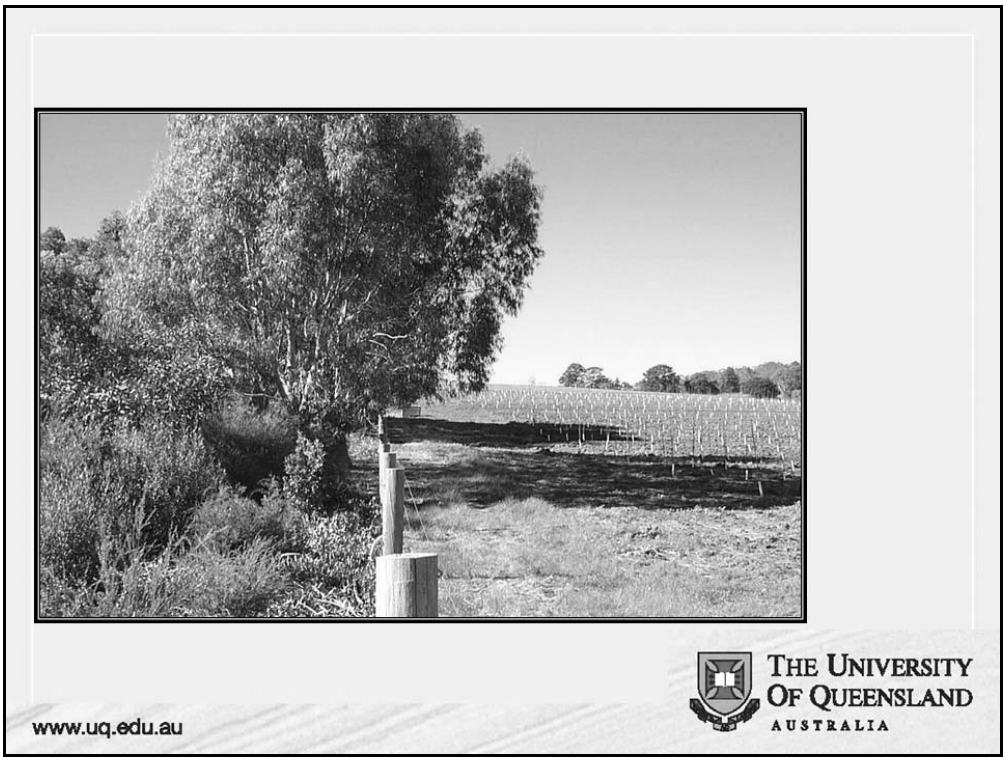
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Vegetative Buffers Design Principles

- **A wide band of porous vegetation minimises air disturbance while providing a large number of catching surfaces**
- **Thin rough foliage should extend from the base to the crown - mixed plantings to reduce gaps**
- **Small and or hairy leaves maximise droplet capture**
- **Permeable barriers should allow air to pass through the buffer (50%porosity?)**
- **Barrier height greater than 1.5 - 2 times release height**

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Vegetative Buffers

- **Can be used to mitigate spray drift**
- **Create habitat and corridors for wildlife**
- **Assist in pest management by increasing diversity of biological systems**
- **Favourable influence on microclimate**
- **Contribute to the reduction of the impact of noise and dust**
- **Provide opportunities for recreational uses**
- **Aesthetically pleasing**

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Vegetative Buffers a Queensland Example

- **Queensland Government guidelines (Dept of Natural Resources) has encouraged the establishment of vegetative barriers for spray drift mitigation**
- **Planners, developers, scientists and agricultural enterprises have been brought together to design mitigating structures and procedures for the rural/urban interface**
- **Can be used as a component part of spray drift management strategies**
- **Further research on multiple structures (natural and artificial) and downstream effects required**

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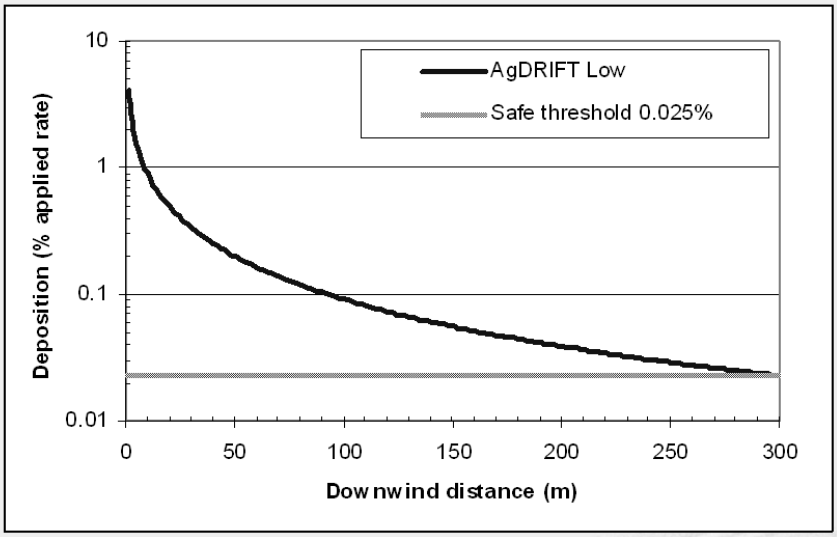
Approach used by APVMA to determine buffer distance



Buffer distance = 300m

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Training Response

- The purpose of training is to ensure you or your workers have the appropriate skills and knowledge to handle agricultural chemicals in a manner that is safe and likely to reduce the risk of off-target spray drift. A training program should cover:
- Legislative requirements for the use of agricultural chemicals at workplaces as they relate to:
- Obligations under the *Workplace Health and Safety Act 1995* and the *Dangerous Goods Safety Management Act 2001* and their regulations
- The legal significance of the label.

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Mission and Vision of the Proposed Model

- To respond to 'changing' environmental, climatic, social, legislative and economic influences in the Agrifoods sectors;
- Implement more proficient chemical application methodologies and qualifications through educational programs and frameworks which in turn will implement '*risk reduction strategies*';
- Increase the financial, environmental and sustainable components of our rural regional communities and industries.

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References

- Integrating good quality agricultural land management into regional NRM plans (Qld Government Publication. 2004.)
- *Spray Drift Management-Principles, Strategies and Supporting Information* (Primary Industries Standing Committee Report 82, CSIRO Publishing) and the code of practice *For The Storage and Use of Chemicals at Rural Workplaces.*
- APVMA operating principles in relation to spray drift risk (Commonwealth of Australia. 2008.)
- The Threat of Pesticide Spray Drift (National Toxics Network Inc. 2008)

Presentation 10, Pesticide Action Network Asia & Pacific, Koa TASAKA

Request for Reconsideration over Japanese ODA Policy on Promoting Pesticide Impregnated Mosquito Net and Domestic Policy on Aerial Spraying of Pesticide from the View Point of Risk Reduction Strategy.

Presentation at the OECD Seminar on Pesticide Risk Reduction Strategies near/in Residential Areas
17 November 2009, Tokyo, Japan
By Dr. Koa Tasaka
Steering Council Member of
PAN Asia & Pacific

Two Issues related to the Risk of Pesticide Use near/in Residential Areas

1. Risk of Promoting Pesticide Impregnated Mosquito Net for Malaria Control and Proposal for the Risk Reduction Strategy for **Japanese ODA Policy**.
2. Risk of Aerial Spraying of Pesticides near the Residential Areas for Agricultural Pest Control and for the Conservation of Pine Trees. Proposal for the **Change** of Japanese domestic policy on Aerial Spraying.

1. Japanese ODA Policy on Pesticide

- From 1977 2KR was started as one of the Japanese ODA to promote food production in developing countries.
- The contents of 2KR was a set of three components, i.e., Chemical fertilizer, Pesticide and Farming Machine.
- Sending pesticides to developing countries by ODA has been criticized by NGOs and International Organization such as FAO.

Ref.; Prevention and disposal of obsolete and unwanted pesticide stocks in Africa and the Near East, FAO Pesticide Disposal Series, No. 9, 2001.

Recent Japanese ODA Policy on Pesticides

- 1994; JICA and MoFA stopped sending pesticides to Cambodia.
- 2002; MoFA stopped sending pesticides to any countries by 2KR.
- 2003; MoFA started promoting the distribution of mosquito nets impregnated with permethrin under UNICEF and WHO scheme to roll back malaria.

Production of Olyset Net

1999 20,000 Sets has been produced in China

2001 WHO recommended Olyset net as the means for controlling Malaria, and asked Sumitomo Chemicals for the large scale production.

2005 5 Million sets produced in China

2006 Production Sites; 2 in China, 1 in Africa(Tanzania), and 1 in Vietnam

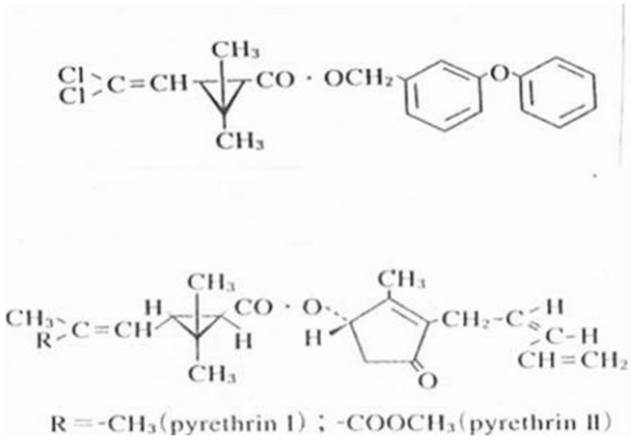
2009 29 Million sets/Year from Tanzania, and Total 51 Million sets/Year production is expected. New production site in Nigeria planned.

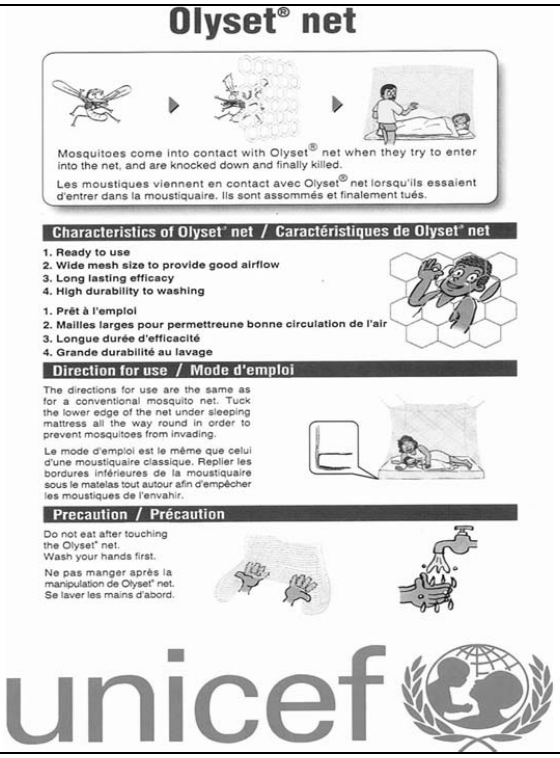
Financial Support by Japanese Government for the Promotion of Pesticide Impregnated mosquito Net (Olyset Net)

- In Africa, the production of Olyset net started in Tanzania in 2003 to 2004, and Japanese Government provided 4.5 Million US$ loan through JBIC to construct the second production site in Tanzania.
- The Olyset nets produced there has been distributed in 24 countries in Africa including Uganda, Ethiopia, Sudan, etc., through JICA and UNICEF, in some countries with free of charge and in the other countries sold at 7 US$. Japanese government spent 4.3 million US$ and 28.35 million US$ for the promotion of this type of mosquito net through JICA and UNICEF, respectively between 2003 and 2006.

Risks associated with the Use of Pesticide-impregnated mosquito net

Chemical Structure of Synthetic Permethrin vs. Natural pyrethroids





Risk of Using Mosquito Net Impregnated with Permethrin

- Although permethrin has very low acute toxicity, there are reports on the adverse effects on the health of mammals such as damage on the brain development by oppressing the expression of genes (Ref. 1,2).

References on the Adverse Effects of Permethrin on Mammals

1. L. Imamura, M. Tsuda et al.,"Repression of Activity-Dependent c-*fos* and Brain-Derived Neurotrophic Factor mRNA Expression by Pyrethroid Insecticides Accompanying a Decrease in Ca^{2+} Influx into Neurons", J. Pharmacol. Exp. Therap. 295, 1175-1182(2000)
2. Yoichiro Kuroda, "Abnormal Behavior of Children, Adverse Effect of Chemical Pollutants in the Environment on the Development of Brain; Disturbance of Expression of DNA by PCB, Pesticides and Other Pollutants(In Japanese)", KAGAKU, 73(11), 1234-1243(2003).

Development of Resistance Power to Permethrin among Mosquitoes in Africa

In addition to the report on Forum, "Safety Net for Malaria?" in Environmental Health Perspectives 115(5), May 2007, there are substantial number of reports on the development of resistance to permethrin among *Anopheles gambiae* in various countries in Africa, such as Uganda(Ref.1),Kenya(1,8), Gabon(1), Cameroon(1,2,3), Equatorial Guinea(1), Ghana(4), Nigeria(4), Burkina Faso(5), Beninn(6), Mozambique(7), Niger(9), and in African continent in general(10).

References on the finding of permethrin-resistant mosquitoes

1. Della Torre A, Malaria Journal, 2008 Apr.29.
2. Simard F, Am. J. Trop. Med. Hyg., 2006 May
3. Simard F, Trop. Med. Int. Health, 2008 Apr.
4. Curtis CF, Med. Vet. Entomolo., 2003 Sept.
5. Hougard JM, Am. J. Trop. Med. Hyg., 2002 Dec.
6. Rowland M, Emerg. Infect. Dis., 2007 Feb.
7. Sharp B., J. Med. Entomol., 2006 Mar
8. Nora J. Besansky, Am. J. Trop. Med. Hyg., 70(6), 2004.
9. Jean-Bernard Duchemin, Malaria Journal, 2008, Jul.
10. Drakeley C., Malaria Journal, 2006 Jul.

Risk associated with the Use of Mosquito Net with Permethrin

- Although some of the authors of the articles such as Rowland claims that mosquito net with pesticide is still vital to the protection of people in Africa from Malaria, mosquitoes resistant to pyrethroids may come through the widened hole of the insecticide-impregnated net, and attack the people inside the net.

Proposal for the Production and Distribution of Regular Nets without Insecticide!

- We would like to appeal to the funding agencies and organization which are promoting Mosquito Net with Insecticide including Japanese Government, UNICEF and WHO to reconsider the present policy, and use the same amount of fund for the production and distribution of the regular, traditional mosquito net without insecticide which can be produced locally and sustainably at much cheaper cost to save more people in Africa and elswhere from Malaria, and contribute for the risk reduction by direct contact with pesticide, as well!

2. Risk of Aerial Spraying of Pesticides near the Residential Areas

Aerial spraying of fenitrothion all over Japan became law to "Rescue the pine trees from dying" in 1977. Although Minister of Agriculture and Forestry acknowledged that the data presented to the Diet in support of the new law included fake facts(Ref.1) and expressed sorry for it, the majority member of the Diet voted for the law, and the aerial spraying became compulsive! The law has been extended again and again, without thorough review whether it is really necessary and effective for saving pine trees and on the adverse effects on human health. The spraying has been continuing till today and various health damages especially on children are reported!

Ref.1. ASAHI News Paper, Sept. 13, 1977.

Adverse health effects reported in various places in Japan after the aerial spraying of pesticide

- Over 1000 people, mainly school children, became sick after the aerial spraying in IZUMO City, Shimane Prefecture, in May, 2008!
- In Hamamatsu City, 35 people showed pesticide poisoning symptoms after the aerial spray in May, 2005.
- Saku Sougou Hospital Doctor who has seen many patients of pesticide poisoning warns that organic phosphate pesticides may disrupt the nerve system, and have possibility to give negative effects on children.

Ref.1 ; NIKKEI News Paper, August 14, 2009
2 ; AERA, Asahi Shimbun Weekly, Sept. 15, 2008

Picture of a helicopter spraying pesticide in Izumo City, Shimane Pref.(taken by Kyodo)

島根県出雲市で農薬を散布するヘリコプタ

Adverse Health Effects of the Aerial Spraying

- There are accumulation of reports on adverse health effects, such as

1. "Current issues in organophosphate toxicology", Lucio G. Cost, Clinica Chimica Acta, 2006; 366; 1-13.
2. "Ocular effects of organophosphates; a historical perspective of Saku disease", Dementi B., J. Appl. Toxicol. 14, 1994.
3. "Loss of neuropathy target esterase in mice links organophosphate exposure to hyperactivity", Winrow CJ, et al., Nature Genetics, 2003; 33; 477-85.
4. "Neuropsychologic effects of long-term exposure to pesticides: results from the French phytoner study", Baldi I., et al., Environmental Health Perspectives, 2001; 109:839-44.

Adverse Effects of Organophosphate on the Development of Fetus and Children

1. "Morphogenic role for acetylcholinesterase in axonal outgrowth during neural development", Bigbee JW. Et al., Environ Health Perspect. 1999; 107: 81-7.
2. "Neonatal exposure to neurotoxic pesticides increases adult susceptibility: a review of current findings.", Erikson P. et al., Neurotoxicology, 2000; 21(1-2):37-47.
3. "Pesticides and inner-city children: exposures, risks, and prevention", Landrigan PJ. Et al., Environmental Health Perspectives, 1999; 107: 431-7.

Control of Aerial Spraying of Organophosphates and other Pesticides by Gunma Prefectural Government in Japan

- Although the Japanese Government has been approving the aerial spray of organophosphates, Gunma Prefectural Government requested to refrain from aerial spraying of organophosphate pesticides in May, 2006, considering the adverse effects by the pesticides on the nerve system of children in the sprayed area.
- Izumo City, Matsue City, Yamaguchi City stopped aerial spray of pesticides in 2008.

Introduction of House Bill to Ban the Aerial Spray of Pesticides in Philippines

- *"Aerial Spraying Prohibition Act of 2009"was presented by Congressman Rafael V. Marino to the Republic of Philippines House of Representatives, Fourteen Congress.*
- *The Bill also refers to the KMP/PAN Philippines study which focused on the community of Kamukhaan, small village located in Southern Mindanao http://www.panap.net/uploads/media/kamukhaan_report.pdf. The health effects of pesticides were also highlighted in a 2006 study presented by the Philippine Department of Health this year, in which the study blood and environmental sampling revealed that the majority of residents are exposed to pesticides.*

Request for the thorough review of the Japanese domestic Policy on Aerial Spray of Pesticides from the View Point of Pesticide Risk Reduction

- While most of other OECD countries already has very strict policy on the aerial spraying near the residential areas including schools, parks, hospitals, etc., Japanese Government has been promoting aerial spray for the rescue of pine trees over 30 years.
- We strongly urge New Government of Japan to review;

1. Whether it is effective to stop pine trees dying,
2. Whether it is really necessary to continue it,
3. How is the real situation of adverse effects on human health, especially on children and the aged people who are more vulnerable to the pesticide poisoning.

Thank you for listening!