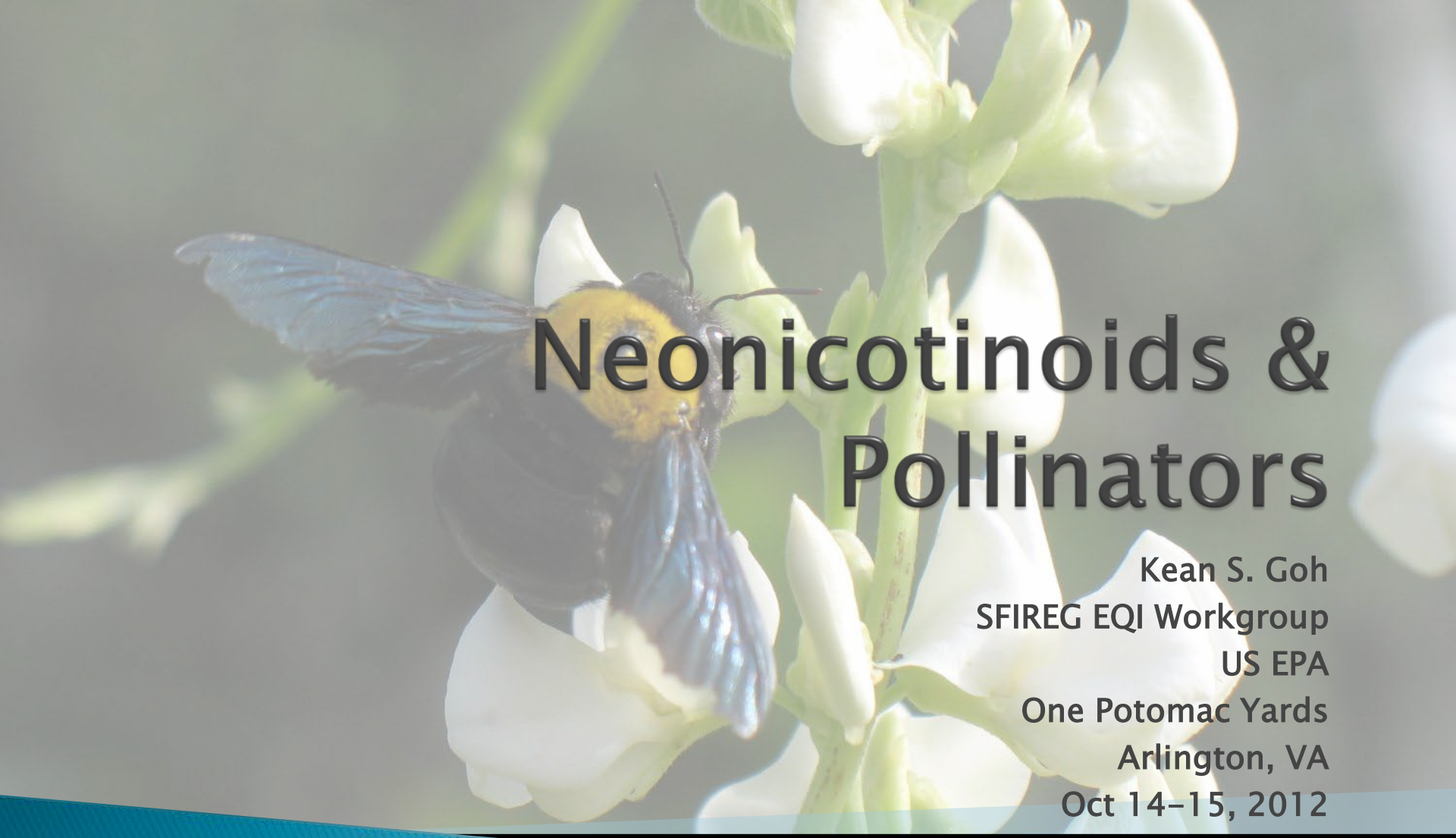


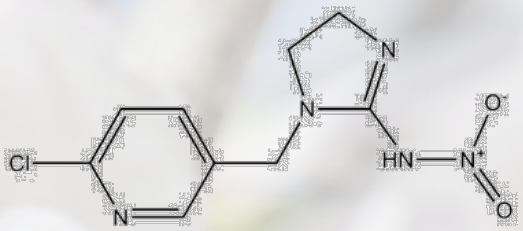
Neonicotinoids & Pollinators

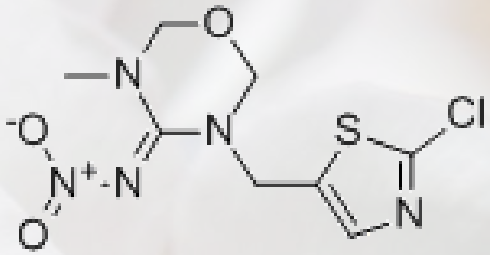
Kean S. Goh
SFIREG EQI Workgroup
US EPA
One Potomac Yards
Arlington, VA
Oct 14-15, 2012

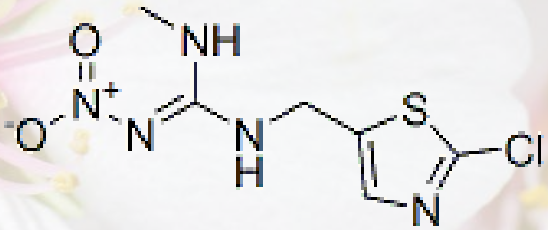
Neonicotinoids

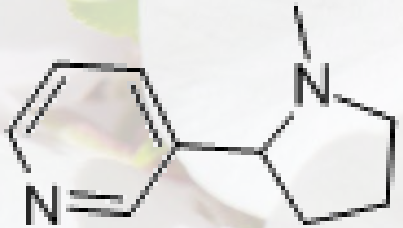
Nitroguanidine neonicotinoids

- Imidacloprid
- Thiamethoxam
- Clothianidin
- Dinotefuran

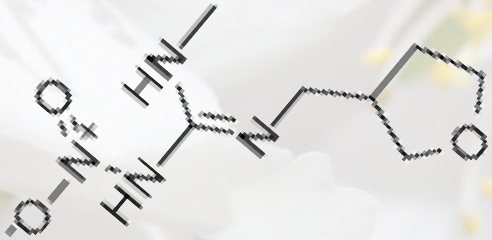






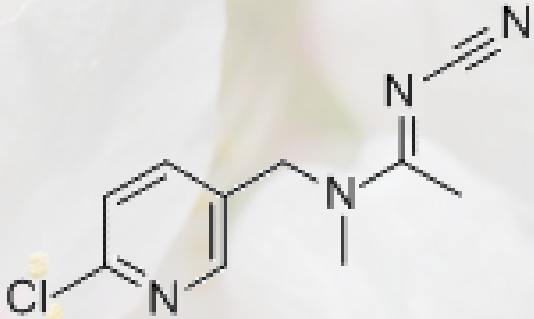


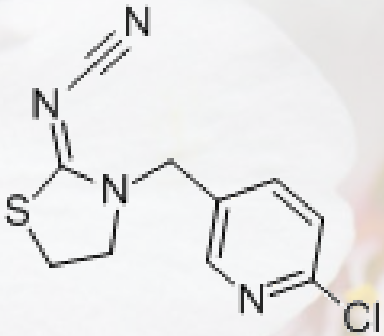
Nicotine



Pyridylmethylamine nicotinoids

- Acetamiprid
- Thiacloprid





Nicotinic acetylcholine receptor agonists

USDA: Colony Collapse Disorder Steering Committee (2007)

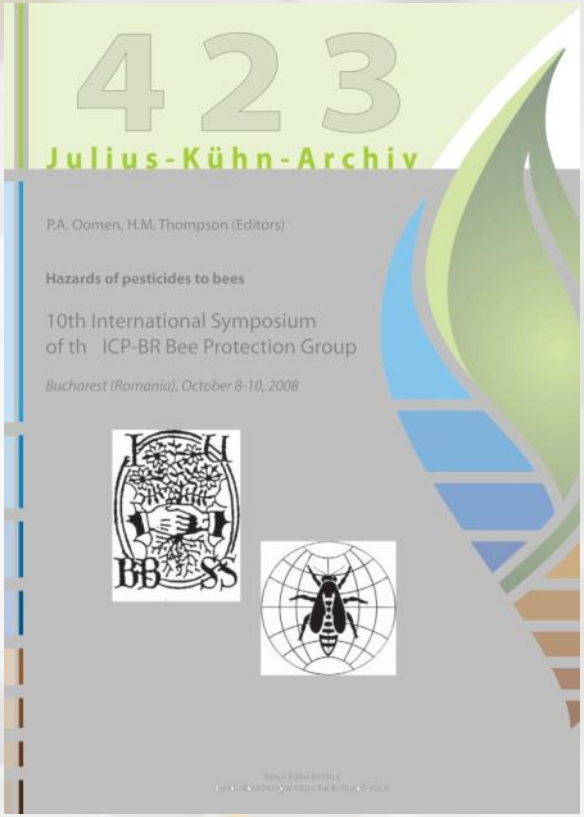
- 2006 U.S. honey bee colonies losses :Colony Collapse Disorder (CCD)
- Mandated by Congress in the 2008 Farm Bill
- Winter losses averaging around 33 %
  - Survey and Sample Data Collection
  - Analysis of Existing Samples
  - Research to Identify Factors Affecting Honey Bee Health,
  - Mitigation and Management Preventive Measures
- National Stakeholders Meeting on Honey Bee Health on October 15-16, 2012.

ICP-BR: Bee Protection Group

INTERNATIONAL COMMISSION FOR PLANT-BEE RELATIONSHIPS
BEE PROTECTION GROUP
10th International Symposium

HAZARDS OF PESTICIDES TO BEES

Bucharest, Romania
October 8-10, 2008



Committee

Pieter A. Oomen (PPS, NL), Chairman
Helen Thompson (CSL, UK), Secretary
Gavin Lewis (JSC International Ltd, UK)
Dietrich Brasse (Braunschweig, D)
John Stevenson, (Harpenden, UK)

CDPR: adverse effects (2008)

- Cal Dept. Pesticide Regulation received adverse effects disclosure on imidacloprid.
- Residues detected in honey/bumble bee from studies of imidacloprid use on ornamental plants.
- Imidacloprid in leaves and blossoms of treated plants (4ppm)
- Residue in soil (180-540d)

CDPR: Reevaluation (2009)

California Notice 2009-02: NOTICE OF DECISION TO INITIATE REEVALUATION OF CHEMICALS IN THE NITROGUANIDINE INSECTICIDE CLASS OF NEONICOTINOIDS.

- Imidacloprid, thiamethoxam, clothianidin (main metabolite of thx), and dinotefuran.
- Requirements: Residue data in pollen and nectar from surrogate crops grown in California, treated at full label rate for two years. Crops selected based on use and potential for exposure. Crops must be grown in three soil types with three fields/soil type/crop.
- Adult and larval toxicity study.

US EPA: Registration Review (2008)

EPA reviewing schedule:
imidacloprid December 2008.
clothianidin, dinotefuran, and thiamethoxam December 2011.
acetamiprid and thiacloprid fourth quarter FY 2012.

- Common mode of action
- Registered after 1984 so not subject to reregistration.
- Some uncertainties have been identified since their initial registration: potential environmental fate and effects, especially as they relate to pollinators.
- Residues in pollen and nectar, potential exposure to pollinators. Adverse effects data, beekill incidents.
- Ecological risk assessment: potential effects of the neonicotinoids to honeybees and other pollinating insects.

SETAC Pellston Workshop (Jan 2011)

Pesticide Risk Assessment for Pollinators: Summary of a SETAC Pellston Workshop

David Fischer
Bayer CropScience LP

Thomas Moriarty
Office of Pesticide Programs
US Environmental Protection Agency

Pesticide Risk Assessment for Pollinators
15–21 January 2011
Pensacola, Florida, USA

PPDC: Pollinator Protection Workgroup (April 2011)

Pesticide Program Dialogue Committee Pollinator Protection Workgroup

- Initial, science-based risk management approaches, including appropriate labeling restrictions and training
- Development of information on state approaches and authorities
- Transfer of lessons learned by various stakeholders to improve existing management practices
- Continuing international communication
- Draft PR Notice 2000-xx (see attachment)
- Members: Academics, Beekeepers, Grower Groups, Industry, NGO, Governments

- Wrap-up Nov 2012

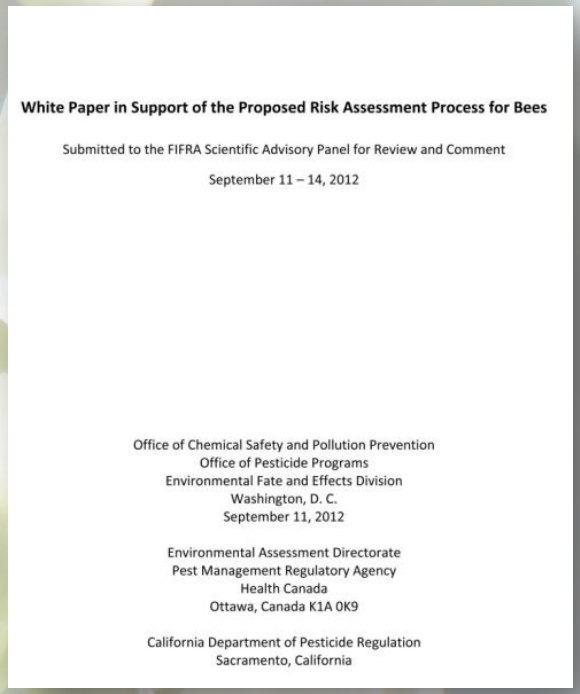
White Paper (2012)

White Paper in Support of the Proposed Risk Assessment Process for Bees
Submitted to the FIFRA Scientific Advisory Panel for Review and Comment
September 11 – 14, 2012

Office of Chemical Safety and Pollution Prevention
Office of Pesticide Programs
Environmental Fate and Effects Division
Washington, D. C.

Environmental Assessment Directorate
Pest Management Regulatory Agency
Health Canada
Ottawa, Canada K1A 0K9

California Department of Pesticide Regulation
Sacramento, California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Environmental Fate and Effects Division
Washington, D. C.
September 11, 2012

Environmental Assessment Directorate
Pest Management Regulatory Agency
Health Canada
Ottawa, Canada K1A 0K9

California Department of Pesticide Regulation
Sacramento, California

White Paper: Pollinator Risk Assessment Framework (2012)

- Describes problem formulation: define protection goals and assessment endpoints, conceptual models depicting potential routes of exposure affecting individual bees (larvae and adult) as well as whole colonies.
- Discusses the data and methods used for quantifying exposures and effects and characterizing potential risks to honeybees.
- Proposes a multi-tiered approach that initially relies on laboratory-based studies on individual bees, and then transitions to more realistic field-based studies involving whole colonies.

US EPA SAP 2012

Pollinator Risk Assessment Framework

U S FIFRA SCIENTIFIC ADVISORY PANEL (SAP)

September 11 – 14, 2012

- Conceptual Models and the Proposed Risk Assessment Process
- Exposure Pathways of Pesticides to Honey Bees and their Relative Importance
- Tier I Method for Estimating Exposure of Honey Bees to Pesticides –Tier I Exposure Refinements & Tier II Tools for Assessing Exposure of Bees to Pesticides
- Methods for Evaluating Toxicity of Pesticides on Bees
- Risk Characterization
- Tier I Screening Process Performance
- Colony-level Simulation Models

National Pesticide Information Center

- Ecological Pesticide Incident Reporting portal.
- Reporting ecological incidents related to pesticide exposures: adverse field effects involve non-target entities such as: wildlife, birds, fish, shell fish, bees, plants, soil, and water.
- Collect information from government organizations, academia, wildlife rehabilitation centers, conservation societies, and bee keepers.
- Kaci Buhl, Project Coordinator
- http://pi.ace.orst.edu/erep/
- 1-800-858-7378

Bee incidents report (2009–2012)

- Nine incidents to date
- CA, MI, NJ, NV, ND, UT.
- Raw data as reported not reviewed

Active Ingredients	
Ingredient:	Quantity:
diflubenzuron	2
tebuconazole	2
chlorpyrifos	2
clothianidin	2
carbaryl	1
potasan	1
fenoxaprop-ethyl	1
boscalid	1
chlorothalonil	1
2,4 dimethylphenyl formamide (dmpf)	1
cyprodinil	1
pyraclostrobin	1
w/41 glyphosate, isopropylamine 41,	1
unknown	1
abamectin	1
Total:	19

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