

Potential Designated Chemicals: Pyrethrins and Pyrethroids

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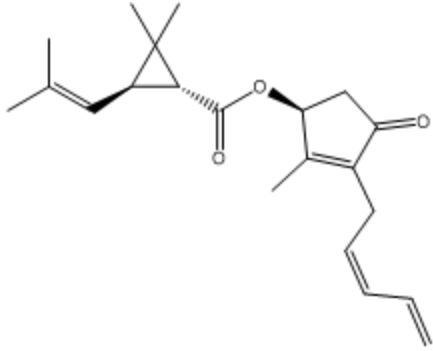
California Environmental Contaminant Biomonitoring Program
Office of Environmental Health Hazard Assessment

Presentation to Scientific Guidance Panel July 28, 2009

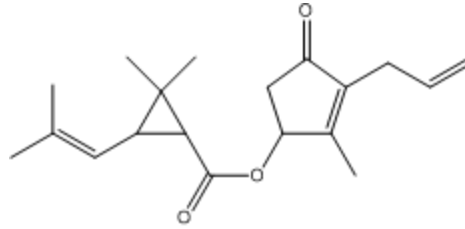
Overview

- ▶ March SGP 2009 meeting
 - All designated pyrethrins and pyrethroids named as priority chemicals for CECBP
 - SGP expressed interest in considering pyrethrins and pyrethroids as a class for designation
- ▶ Numerous pyrethrins/pyrethroids registered for use in California but not yet included in CECBP

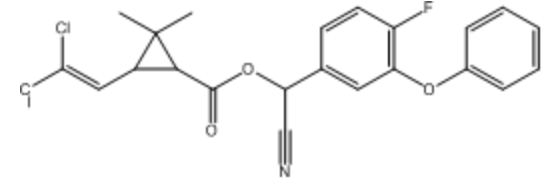
Chemical identification



Pyrethrin I



Allethrin



Cyfluthrin

- ▶ Natural pyrethrins derived from chrysanthemum
- ▶ Pyrethroids are synthetic esters with more stable insecticidal properties
- ▶ Several metabolites shared among different pyrethrins / pyrethroids

Exposure or potential exposure

- ▶ 26 pyrethrins / pyrethroids registered for use in California
- ▶ Use is increasing
- ▶ Pyrethroids on CDPR Top 100 list for 2007 (agricultural / structural uses)
 - Permethrin (414,000 lbs)
 - Cypermethrin (337,000 lbs)

Exposure or potential exposure

- ▶ Household pyrethrin/pyrethroid use increasing
 - Linked to decline of organophosphates and carbamates
- ▶ American Healthy Homes Survey found 17 pyrethroids detected in home floor wipes
 - Permethrin detected most frequently of any pesticide tested
 - Permethrin and cypermethrin detected at the highest concentration of any pesticide tested

Known or suspected health effects

- ▶ Carcinogenicity
 - Resmethrin* – “known to cause cancer” (Prop 65)
 - Permethrin* – “likely to be carcinogenic to humans” (U.S. EPA)
 - Bifenthrin, cypermethrin*, tetramethrin – “possible human carcinogens” (U.S. EPA)

- ▶ Evidence for endocrine disruption (report for EU)
 - Bifenthrin
 - Bioallethrin
 - Cyhalothrin
 - Cypermethrin*
 - Deltamethrin*
 - Fenvalerate
 - Permethrin*
 - Pyrethrin*
 - Resmethrin*
 - Sumithrin

* Priority chemical for the CECBP

Summary

- ▶ CDC biomonitor a number of pyrethrins and pyrethroids, which are CECBP priority chemicals
- ▶ Numerous others registered for use in CA, use is increasing, new products likely
- ▶ Pyrethrins/pyrethroids have structural and toxicological similarities and share metabolites
- ▶ Designating pyrethrins and pyrethroids as a class would allow consideration of possible priority chemicals in an efficient manner