California Environmental Protection Agency
Department of Pesticide Regulation

Proposed Regulation to Designate Chlorpyrifos a Restricted Material

November 2014

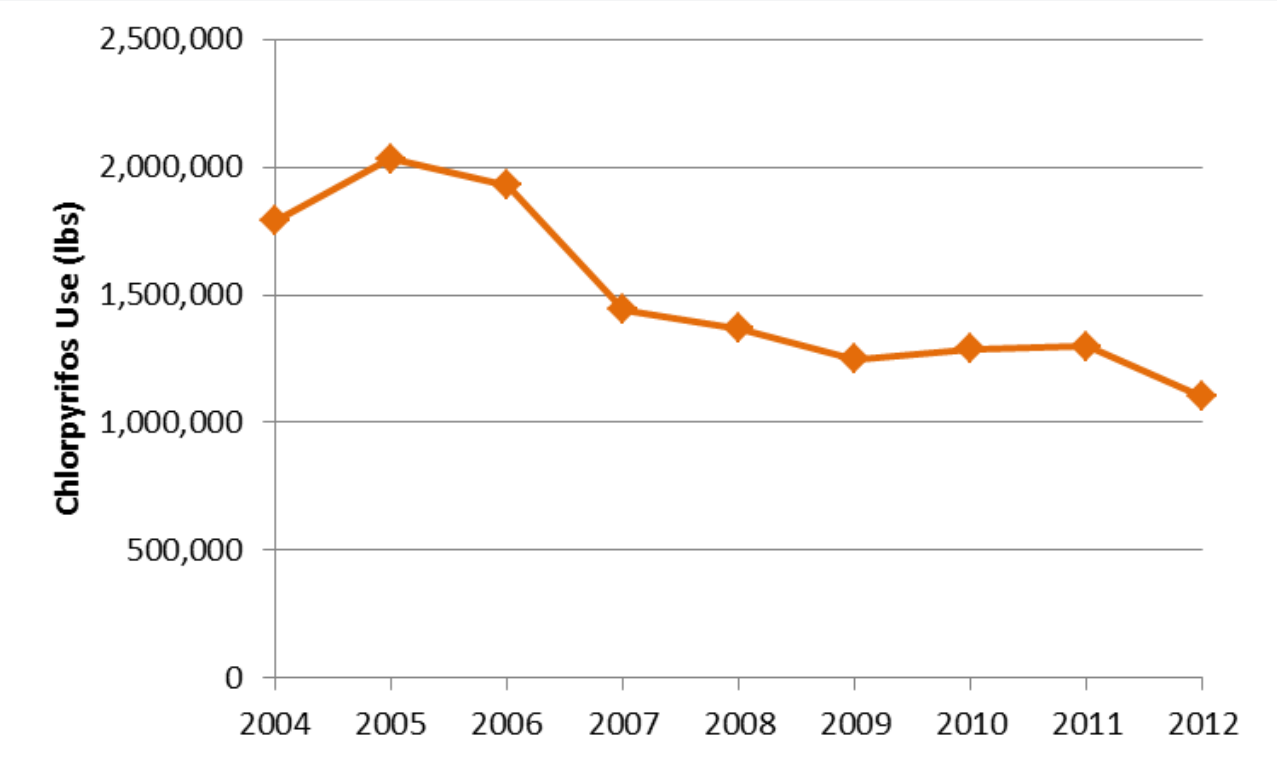
Outline

- Background and current use requirements
- Key environmental and health issues
- Proposed regulation
- Related activities
- Next steps and timeline

Background – use by year

- Chlorpyrifos is a widely used insecticide, more than 99% for agricultural commodities

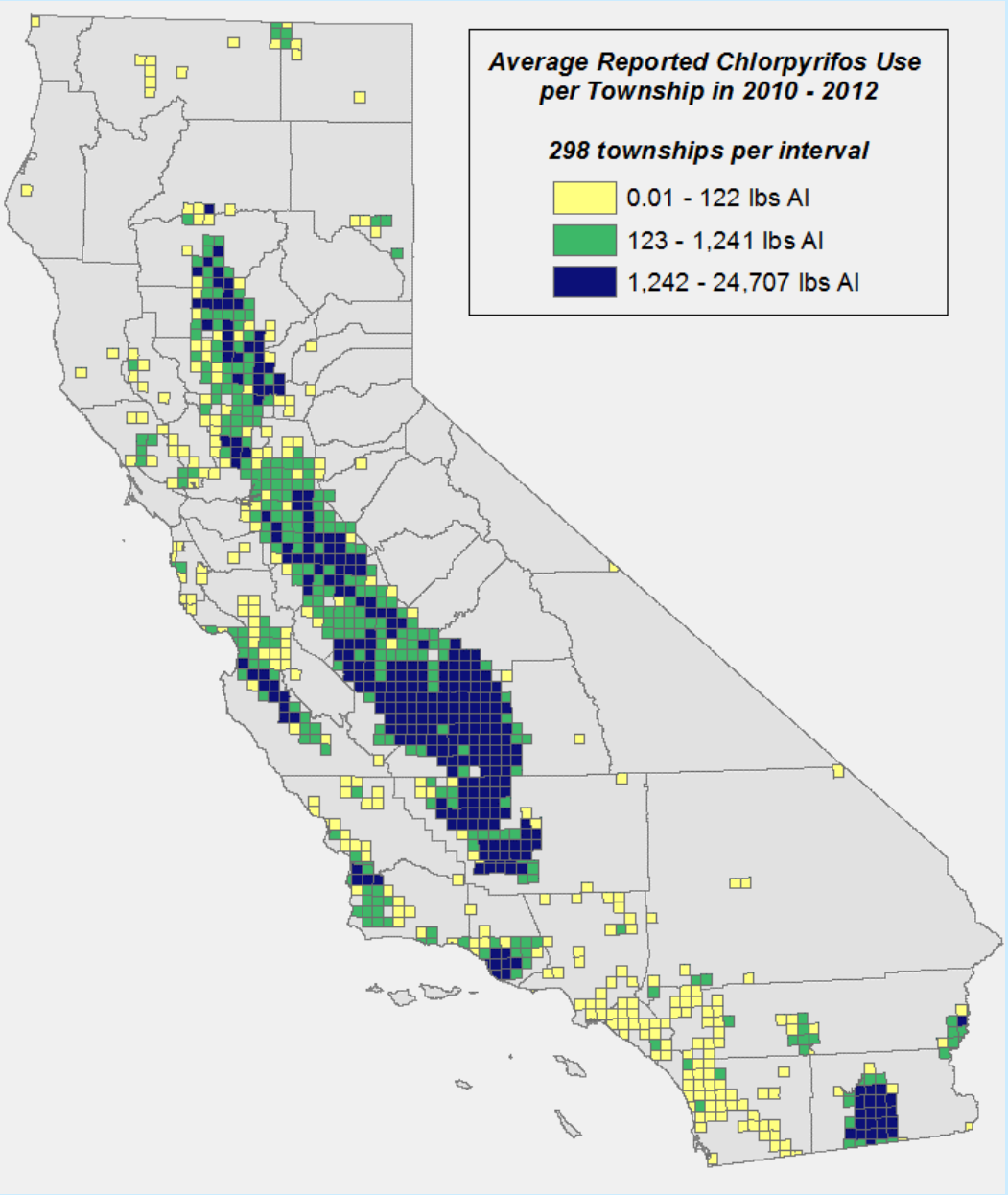
- Use has been decreasing, but more than a million pounds are applied each year



Background – 2010-2012 annual use by location

- Most use occurs in the Central Valley, Central Coast, and Imperial County regions

- The top 5 counties were
  - Fresno
  - Kern
  - Tulare
  - Kings
  - Imperial



Background – 2010-2012 annual use by crop and method

- Chlorpyrifos is applied to more than 60 crops, but the top 5 crops account for more than 70% of the use
- 2/3 of the applications are by ground rig, 1/3 by air

Crop	Aerial (lbs)	Ground (lbs)	Total (lbs)
Almond	49,721	179,093	229,246
Alfalfa	142,593	35,169	178,925
Walnut	19,209	150,722	170,194
Orange	47	168,787	169,736
Cotton	122,370	13,273	135,702
Grape	19	96,711	97,624
Corn	24,124	15,761	40,048
Broccoli	174	33,213	33,408
Sugarbeet	23,780	7,114	33,138
Lemon	259	27,445	27,731
All other crops	15,684	95,647	115,368
Total	397,981	822,934	1,231,121

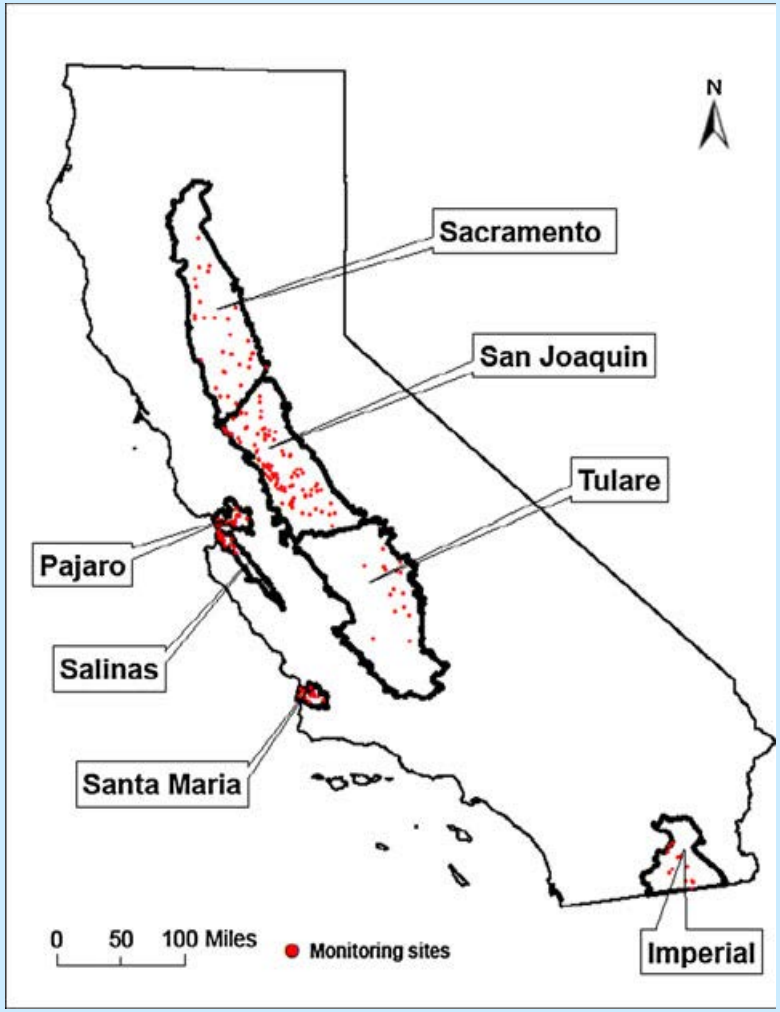
Current label requirements for bystander and environmental impacts

- Certain products are federally restricted use pesticides that require a certified applicator, but not a permit
- Setbacks from aquatic areas: 25-150 feet
- Setbacks from sensitive areas: 10-100 feet
- Application method restrictions and spray drift management

Current DPR regulations for environmental impacts from dormant sprays (3 CCR section 6960)

- Option 1: Apply to a hydrologically isolated site
- Option 2: Hold runoff for 72 hours
- Option 3:
  - Obtain pest control adviser (PCA) recommendation
  - No application within 100 feet of sensitive aquatic site
  - Wind speed 3-10 mph
  - Most aerial applications prohibited
- Plus: no dormant application if soil moisture at field capacity or storm runoff forecasted within 48 hours

Key environmental issues – surface water detections



Region	Sites	samples	Detect %	Exceed %
Santa Maria	19	94	79.8	59.6
Salinas	22	279	44.8	26.5
Imperial	24	114	46.5	26.3
Pajaro	22	78	16.7	11.5
Tulare	37	337	12.5	9.8
San Joaquin	115	2591	12.2	6.2
Sacramento	42	601	9.5	1.8
All Regions	281	4094	16.7	9.1

U.S.EPA benchmark of 0.04 µg/L used to determine number of exceedances.

Credit: Xuyang Zhang, SWPP

Key health issues – potential health effects

- Acute, high-dose exposures
  - Effects include tremors, vomiting, convulsions
- Some studies suggest that lower-dose exposures can cause neurodevelopmental effects in infants and children
  - More susceptible because of their developing nervous systems
- Exposures of residents in rural areas where chlorpyrifos is applied are potentially of concern
  - Exposure data are lacking for those who are downwind of applications
  - Calculating exposure estimates requires many assumptions

Key health issues – potential bystander exposures from drift

- Air monitoring and inhalation exposure
  - Max concentration from ambient monitoring ~1 ug/m^3
  - Max concentration from application-site monitoring ~50 ug/m^3
- Computer modeling to estimate off-site deposition and dermal exposure is in progress
- Other exposures are possible, such as ingestion by infants due to hand-to-mouth activities
- During 2001-2011, 35 applications might have or definitely caused illnesses to 136 people due to drift

Proposed regulation

- DPR proposed a regulation for chlorpyrifos due to health and environmental concerns, particularly from drift
- Proposed regulation will make chlorpyrifos a state restricted material when used for production of an agricultural commodity
  - Applications must be made or supervised by a certified applicator
  - Purchase, possession, or use requires the property operator to obtain a permit from the county agricultural commissioner
  - Applications for hire require a pest control adviser recommendation

Certified applicator requirements – no changes

- 3 types of certification
  - DPR-issued qualified applicator license (QAL)
  - DPR-issued qualified applicator certificate (QAC)
  - Agricultural commissioner-issued private applicator certificate (PAC)
- Certified applicator requirements
  - Must pass examinations
  - QAL/QAC valid for 2 years; PAC valid for 3 years
  - Continuing education required to renew

Restricted materials permit requirements – no changes

- PCAs and growers must consider and adopt feasible mitigation measures and alternatives which substantially lessen environmental impact
- Agricultural commissioners must evaluate permit applications and notices of intent, including
  - If substantial environmental impact will occur
  - Local conditions
  - Information from DPR and other specified sources
- Agricultural commissioners may approve, condition, or deny a permit

Chlorpyrifos products affected

- 38 total end use products with active registrations
  - 30 products used for the production of agricultural commodities will be affected
    - 24 products are federally restricted use pesticides that require a certified applicator, but not a permit
  - 8 products used solely for non-production agriculture or non-agriculture uses will not be affected
    - Examples: golf courses, rights of way, landscape maintenance, seed treatments, non-residential structures, livestock housing, cattle tags

Related activities – research and analyses in progress

- **DPR air monitoring network** – ambient air monitoring in Ripon, Salinas, and Shafter

- **Air Resources Board monitoring** – monitoring during and after an application – monitored aerial application in Imperial during Oct 2014

- **CA Dept of Food and Agriculture-Coalition for Urban Rural Environmental Stewardship project** – improving efficiency of pesticide applications by minimizing offsite movement from orchards; outreach on good spraying practices

Related activities – DPR grants and contracts in progress

- Reduced risk approaches to manage maggot pests in cole crops in the Central Coast (Joseph)
- Integrated pesticide reduction strategies for insect and disease management in cole crops (Shennan)
- **Identify critical uses and define suites of best practices for chlorpyrifos in alfalfa, almond, citrus, and cotton (Goodell)**
- Ecoinformatics approaches to reduce use of high-risk insecticide on San Joaquin Valley citrus (Rosenheim)
- California pesticide efficacy and selectivity trials archive (Grieneisen)

Major results of Goodell project

http://www.cdpr.ca.gov/docs/pestmgt/crit_uses.htm

- Action plan identifies 46 insect pests for which chlorpyrifos is used (10-14 per crop)
  - 9 were identified as key pests with few or no viable alternatives to chlorpyrifos (3 in alfalfa, 2 each in almonds, citrus, and cotton)
  - 25 important pests with alternatives
  - 12 occasional pests with alternatives

Criticality Tier	Alfalfa Pest
Key pests	Weevils (alfalfa & Egyptian) Blue alfalfa aphid Cowpea aphid
Important pests	Alfalfa caterpillar Armyworm Pea aphid
Occasional pests	Cutworm Leafhoppers Spotted alfalfa aphid Webworm

Major results of Goodell project

- Four crop specific reports were developed detailing
  - Matrices of critical uses of chlorpyrifos
  - Relative costs of alternative active ingredients
  - Best management practices
  - Currently available alternative management practices
  - Gaps in research, extension, and policy
  - Profiles for each pest

- Plan for 2015 and 2016
  - Update UC IPM Guidelines
  - Develop educational products, including an online decision support tool to provide guidance to growers and document decision making process

Next steps and timeline

- November 12, 2014: end of comment period
  - Received comments from approximately 50 people
- Spring 2015
  - Complete rulemaking (respond to comments, prepare final statement of reasons)
  - Resolve toxicity uncertainties
  - Identify key exposure scenarios and estimate exposures
  - If necessary, set risk management goals

Next steps and timeline

- Summer/Fall 2015: if necessary, develop recommended permit conditions
  - Estimate drift and air concentrations with monitoring data and computer modeling
  - Consider application method restrictions
  - Consider revised setbacks for sensitive sites
  - Consider information developed from the grants and other research
- Effective date of regulation is uncertain due to
  - Volatile organic compound issues
  - Uncertain completion date for permit conditions
  - Ag commissioner workload