

Potential Designated Chemicals: Pesticides

Rachel Roisman, M.D., M.P.H.

California Environmental Contaminant Biomonitoring Program
Office of Environmental Health Hazard Assessment

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Designated chemicals

- ▶ “...known to, or strongly suspected of, adversely impacting human health or development, based upon scientific, peer-reviewed animal, human, or in vitro studies...”
- ▶ Chemicals in CDC National Reports on Human Exposure to Environmental Chemicals are designated
- ▶ SGP may recommend additional designated chemicals

Criteria for recommending additional designated chemicals

- ▶ *Exposure or potential exposure* to the public or specific subgroups
- ▶ The *known or suspected health effects* based on peer-reviewed scientific studies
- ▶ The *need to assess the efficacy of public health actions* to reduce exposure
- ▶ The *availability of a biomonitoring analytical method* with adequate accuracy, precision, sensitivity, specificity, and speed
- ▶ The *availability of adequate biospecimen samples*
- ▶ The *incremental analytical cost* to perform the biomonitoring analysis for the chemical

Top 100 pesticides (pounds applied) statewide in 2007 (CDPR)

- ▶ Divided chemicals into several categories
 - Priority chemicals for CECBP (10)
 - Designated chemicals for CECBP (11)
 - Potential designated chemicals (28)
 - Fumigants (7)
 - Not thought to be promising for inclusion in the CECBP (oils, inorganics, mixtures, not easy to biomonitor) (40)

Note: several chemicals fall into more than one category, and several chemicals are listed more than once, so total is not 100

Top 100 pesticides: Priority chemicals

- ▶ Pyrethroids
 - Permethrin
 - Cypermethrin

- ▶ Organophosphates
 - Acephate
 - Chlorpyrifos
 - Diazinon
 - Dimethoate
 - Malathion
 - Naled
 - Oxydemeton-methyl
 - Phosmet

Top 100 pesticides: Designated chemicals

- ▶ CDC biomonitoring results available
 - 2,4-D, dimethylamine acid, salts and esters
 - Will be discussed at the meeting today
- ▶ CDC biomonitoring results expected soon (2009)
 - 9 pesticides
 - Will be discussed at a future meeting
- ▶ Planned for inclusion in NHANES 2007–2008 cycle
 - Glyphosate

Top 100 pesticides: Potential designated chemicals

- ▶ Orderly process for bringing these chemicals to SGP for discussion
- ▶ Emphasis on:
 - Chemicals of high use in CA
 - Chemicals with significant household use
- ▶ Some will be discussed today
- ▶ Other chemicals raised issues we would like SGP feedback on before we proceed

CDC biomonitoring results availability

- ▶ For example, glyphosate is planned for inclusion in the 2007–2008 NHANES cycle
- ▶ Results may not be available until 2011
- ▶ *Should we wait for CDC results before bringing chemicals to SGP as potential priority chemicals?*

Chemicals with shared metabolites

- ▶ *Example:* Propanil (3,4-dichloropropionanilide) is an acetanilide post-emergence herbicide used to control grasses and weeds
- ▶ Use (on rice crops) is increasing

2003 (lbs applied)	2004 (lbs applied)	2005 (lbs applied)	2006 (lbs applied)	2007 (lbs applied)
1,376,309	1,678,000	1,418,100	1,493,978	1,801,607

- ▶ Metabolite (3,4-dichloroaniline) has been biomonitoring in humans
- ▶ Metabolite shared with other chemicals of interest to CECBP (diuron, linuron, triclocarban)
- ▶ *Should chemicals that share metabolites with CECBP designated or priority chemicals be automatically assigned the same status?*

Chemicals with declining use

- ▶ Some pesticides are high use but use is declining

Selected chemicals	2003 (lbs applied)	2004 (lbs applied)	2005 (lbs applied)	2006 (lbs applied)	2007 (lbs applied)
Carbaryl	205,102	240,135	190,633	157,000	142,010
Propargite	1,054,691	1,010,874	995,038	569,971	529,536
Simazine	670,916	729,850	623,806	635,486	538,627

- ▶ Other chemicals have been heavily restricted or banned
- ▶ Banned or declining use chemicals may still be present in food or the environment
- ▶ *Should CECBP staff bring limited or declining use chemicals to SGP for possible inclusion in the Program?*

Chemicals with unknown exposure

- ▶ Several fumigants are the top pesticides (lbs applied) used in CA (1,3-dichloropropene, chloropicrin, metam-sodium, methyl bromide, metam-potassium, sodium tetrathiocarbonate, sulfuryl fluoride)
- ▶ Use may be high, but nature of chemical and how it is applied raise questions about exposure outside of farming communities
- ▶ Very limited information available about biomonitoring these chemicals in the general population
- ▶ *Should CECBP staff bring these chemicals to SGP for possible inclusion in the Program?*

Chemicals detected infrequently or at low levels

- ▶ For example, DEET levels were below LOD for most participants in CDC's Third Report.
 - CDC plans to measure other DEET metabolites that are expected to be detected at higher levels
- ▶ Low levels may represent:
 - Low exposure
 - Methodological challenges
- ▶ *How should CDC biomonitoring results guide choice of biomonitoring chemicals for CECBP?*

Chemicals with analytical difficulties

- ▶ **Methods are challenging**
 - Methomyl
 - Fungicides
 - Fumigants
- ▶ **Metabolites are difficult to predict**
 - Fenoxycarb
- ▶ **Metabolites are non-specific**
 - Methomyl
 - Oxamyl
 - Carbaryl
 - Propamocarb hydrochloride
- ▶ *To what extent should analytical difficulties influence consideration of chemicals for CECBP?*

Questions for the SGP

- ▶ Should we wait for CDC results before bringing chemicals to SGP as potential priority chemicals?
- ▶ Should chemicals that share metabolites with CECBP designated or priority chemicals be automatically assigned the same status?
- ▶ Should CECBP staff bring limited or declining use chemicals to SGP for possible inclusion in the Program?
- ▶ Should CECBP staff bring chemicals with unknown exposure to SGP for possible inclusion in the Program?
- ▶ How should CDC biomonitoring results guide choice of biomonitoring chemicals for CECBP?
- ▶ To what extent should analytical difficulties influence consideration of chemicals for CECBP?