The focus of Exposure Assessment Section (EAS) is to identify situations that people may be exposed to pesticides associated with their legal uses, including directly handling pesticides and passively exposure to pesticide. The EAS modelers and toxicologists estimate pesticide exposure to handlers, reentry workers, and bystanders based on environmental concentrations, pesticide use patterns, product labels instructions, monitoring studies, surrogate data or generic database, and computer models. Exposure assessment is an important part of health risk assessment for understanding the potential rates and routes of pesticide exposure occurred under occupational and non-occupational settings.

Exposure Assessment of Imidacloprid

How people could be exposed to imidacloprid?
- Review 275 product labels to identifying exposure scenarios
- Review Pesticide Use Reports to determine the use of imidacloprid in CA
- Identify population may be exposed to pesticides

30 Exposure Scenarios were Identified among:
- Occupational and residential handlers
- Workers & residents reentered into the treated field or areas
- Bystanders exposure via spray drift & activities after applications (e.g., golfing)
- Pets owners during treatment and post-treatment

Some Exposure Estimates Calculations:
**Handler Exposure Estimates:**
- Short-term Absorbed Daily Dosage (STADD) = (95th %ile of mean exposure x absorption x (acres treated/day) x application rate)/body weight (BW)
- Seasonal Average Daily Dosage (SADD) = (mean exposure x absorption) x (acres treated/day) x (application rate)/BW
- Annual Average Daily Dosage (AADD) = SADD x (annual use months per year)/(12 months in a year)
- Lifetime Average Daily Dosage (LADD) = SADD x (40 years of work in a lifetime)/(75 years in a lifetime)

**Agricultural Fieldworker Exposure Estimates:**
- Daily exposure = dislodgeable foliar residues x dermal transfer factor x work hours/day x absorption/BW
- Estimated handler non-human ingestion of imidacloprid residues on treated turf
- For Hand-to-mouth: STADD = (Hand residue loading * (Hand surface A * F_Hand) * (Exposure time * N_Replen) * (1-(1-SE)) * absorption/BW
- For Non-Dietary grass ingestion: STADD = (Object residue loading * Surface area of object mouthed * (ET * N_Replen) * (1-(1-SE)) * absorption/BW

**Spray Drift Exposure Estimates:**
- Using AGDISP and AgDRIFT modeling

Exposure Assessment Process

Scoping:
- Pesticide use status in CA
- U.S. EPA regulatory status
- New and cancelled registrations status
- Formulations and uses
- Label precautions

Identify Exposure Scenarios:
- Occupational handler
- Agricultural field workers
- Residential handler
- Residential reentry
- Animal treatment and post-treatment
- Institutional and recreational

Dermal & Inhalation Absorption Estimates:
- Chemical-specific studies
- Default values

Environmental Concentrations:
- Dislodgeable foliar residues
- Transferable turf residues
- Air contaminants
- Water (surface & ground)

Factors for Handler Exposures:
- Formulation
- Application method
- Amount handled
- Exposure duration
- Acres treated per day
- Absorption rate
- Body weight

Factors for Fieldworkers
- Dislodgeable foliar residues
- Dermal transfer factor
- Work hours/day
- Absorption rate
- Body weight

Computer Modeling:
- Estimate spray drift exposures of bystanders and residences

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