

# **Consideration of Chlorpyrifos as Known to Cause Reproductive Toxicity, Based on Developmental Toxicity**

**Developmental and Reproductive Toxicant  
Identification Committee Meeting  
November 29, 2017**

**Reproductive and Cancer Hazard Assessment Branch  
Office of Environmental Health Hazard Assessment  
California Environmental Protection Agency**



# Consideration of Developmental Toxicity of Chlorpyrifos in 2017

- Substantial new epidemiological and toxicological data on chlorpyrifos and developmental toxicity, particularly neurobehavioral developmental toxicity, have become available since the Committee reviewed the chemical in 2008.
- Only developmental toxicity is being considered at this time because of the volume and complexity of the data.
- Other endpoints (i.e., male or female reproductive toxicity) may be considered at future meetings.

# 2017 Hazard Identification Materials

- The US Environmental Protection Agency (US EPA) reports “Chlorpyrifos: Revised Human Health Risk Assessment for Registration Review (2014 and 2016)”. These reports, particularly the 2014 report, extensively review recent scientific literature on chlorpyrifos and developmental toxicity.
  - Excerpted sections of these US EPA reports relevant to developmental toxicity.
  - Copies of studies relating to the developmental toxicity of chlorpyrifos that were cited in these US EPA reports.
- Copies of additional studies of the developmental toxicity of chlorpyrifos that were not reviewed in the 2014 and 2016 US EPA reports or in the materials provided to the DARTIC in 2008.
- Public comments submitted in 2017 on the updated HIM.

# 2017 Hazard Identification Materials (continued)

- The complete 2008 OEHHA hazard identification materials (including public comments)
  - Excerpted sections of the 2008 HID “Evidence on the Reproductive and Developmental Toxicity of Chlorpyrifos” that are relevant to developmental toxicity.
- Copies of studies relating to the developmental toxicity of chlorpyrifos that were cited in the 2008 HID.

# Scope of Information Relevant to the Developmental Toxicity of Chlorpyrifos

- 390 papers and reports relevant to developmental toxicity provided to DARTIC.
  - 317 papers and reports cited in the 3 review documents (OEHHA 2008, US EPA 2014, 2016).
  - 73 papers or reports not cited in the 3 review documents (most published subsequent to the 2014 US EPA review).

# Additional Data on the Developmental Toxicity of Chlorpyrifos published after 2008

Total additional publications on the developmental toxicity of chlorpyrifos since 2008	81
Epidemiologic studies in humans	18
Experimental studies in animals	63

# Studies Relevant to the Developmental Toxicity of Chlorpyrifos Not Cited in Review Documents

- 3 Human studies (2 neurodevelopmental)
- 25 Mammal studies (19 neurodevelopmental)
- 14 Zebrafish studies
- 15 Mechanistic studies (*in vivo* exposures)
- 21 Other studies (e.g., *in vitro* mechanistic, enzymes and paraoxonases, etc.)

(Several studies appear in more than one category)

# Questions?

