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# Department of Pesticide Regulation

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## MEMORANDUM

TO: John Ross, Ph.D. HSM-99014  
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DATE: July 12, 1999

SUBJECT: CHLORPYRIFOS ODOR PROVOKING THE ONSET OF CLINICAL SYMPTOMS

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Data from the California Pesticide Illness Surveillance Program was examined for cases involving exposure to chlorpyrifos, either alone or in a mixture during 1990-1996. Individual cases which met certain criteria (shown below) were enumerated and shown on the attachment. In order to examine the relationship between exposure to chlorpyrifos odor and the development of clinical symptoms, cases were divided based on a time-to-effect of 1 hour.

### Inclusion Criteria

- No applicator, mixer/loader or manufacturer illness reports were included.
- Cases involving ingestion pathways from spray drift or crawling through soil were excluded as well as large scale industrial accidents (96-1204).
- All cases must either directly indicate the presence of an odor, or include a short exposure period soon after spraying when odor is assumed.
- All cases must include some notion of time, either direct or implicit.

### Implication of Time and Exposure to Odor

Many cases were straightforward and included a specified time between the detection of odor and the onset of symptoms. Other cases however were not so detailed. Information about the time-to-effect was extrapolated from the context. Below are some examples where *less than 1 hour* to onset was implied:

“...became ill after smelling a strong odor.” (1995-1292, p.148)

“...developed symptoms as soon as she smelled the chemical odor.” (1995-1422, 148)

“...developed multiple symptoms...after noticing a pesticide odor in his office.” (1993-1466, p.151)

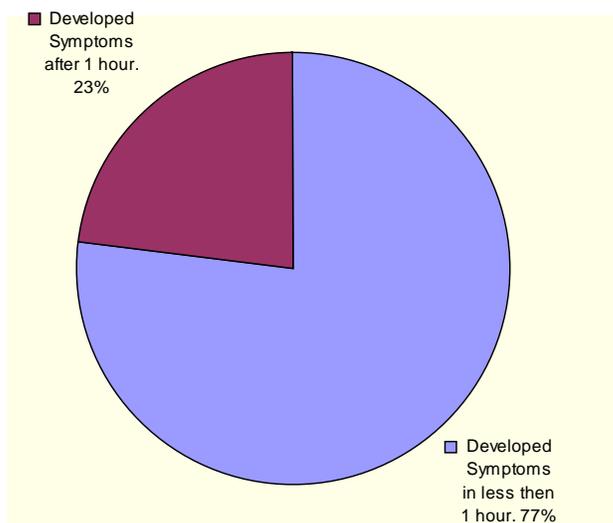
Other information used to interpret details about exposure included activities and behavior. For example, an individual notes an odor in a particular area and becomes ill while performing an activity in that area. Only if the activity was a single act which can be performed in less than an

hour was the case included. That is, can the exposure window be construed as small? In case no. 1994-1467 a man vomited after ingesting 6 oz. of chlorpyrifos and the hospital staff (94-1546, 1638, 1639,1640) who treated him were “overcome by vapors”. Here it can be assumed the hospital staff did not stand over the odorous vomit for more then an hour.

### Results

In short, the criteria for inclusion required some information, either direct or implicit regarding the presence of odor and time-to-effect. In all, 91 cases gave enough information to be considered valid. In 77 % of those who reported experiencing symptoms odor appeared to be an aggravating factor. The opposing 23% who detected an odor developed symptoms after 1 hour.

It can therefore be inferred, at least from this data that odor itself may be the cause of some symptoms related to chlorpyrifos use.



**Figure 1. Odor Detection and Time to Symptom Onset**