



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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MEMORANDUM

OFFICE OF
PESTICIDES AND TOXIC
SUBSTANCES

SUBJECT: Malathion Incidents Involving the Homeless (Intra-0062)

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TO: Brian Dementi, Ph.D.
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As requested NDEB has reviewed the package from the Legal Aid Society of Orange County containing affidavits alledging poisoning of various homeless persons due to spray by malathion. To determine whether signs and symptoms reported were consistent with malathion poisoning, several references were consulted and a list of common signs and symptoms listed in 3 or more of the 6 selected references was prepared for use in the table below (Morgan 1989, Baker et al. 1978, Coye et al. 1986, Zwiener and Ginsburg 1988, Minton and Murray 1988, Hayes 1982). There were a total of 14 persons which reported symptoms at the time of malathion spraying by helicopters in Garden Grove. The number of these individuals reporting symptoms typical and atypical of malathion poisoning are given in the table below. One affidavit contained results of interviews conducted by a nurse 6 days and 10 days after the spraying. These interviews involved 17 people reportedly exposed to the spray and may involve some overlap with the 14 affidavits.

Number of Individuals Reporting Symptoms Typical and Atypical of Malathion Poisoning Among 14 Reporting Through Affidavits and Among 17 People Interviewed by a Registered Nurse.

<u>Typical symptoms</u>	<u>Number with symptoms among 14 cases reported in affidavits</u>	<u>Number with symptoms among 17 cases interviewed by nurse</u>
headache	2	5
nausea	6*	9
muscle twitching, tremor	0	1
fatigue, lethargy	8*	9
vomiting	6*	6
abdominal cramps	2	0
diarrhea	3*	0
sweating	0	0
salivation	0	0
tearing	0	5
bronchial secretions	1	0
blurred vision	1	0
difficulty breathing	4*	3
rapid pulse	1	0
incontinence	1	0
<u>Atypical symptoms</u>		
chills, felt cold	3	10
loss of appetite	4	0
throat irritation, cough	3	6
muscles, joints ache	3	2
nasal congestion	2	0
constipation	1	0

* Symptom counts with an asterik include one case where the onset of symptoms did not develop until 2 or more days after the initial exposure. Normally this would be considered atypical, but in some cases significant exposure may have continued for that period of time due to the wearing of soiled clothing.

A number of symptoms considered neither especially typical or atypical were omitted from the table above including bitter taste in mouth, burning eyes, itchy skin, mood swings, taste affected, furry tongue, rash, disoriented, and nightmares.

As can be seen from the table, the most common symptoms consistent with malathion poisoning were fatigue, nausea, and vomiting. These are relatively nonspecific symptoms that can result from a variety of causes. Other symptoms that would have been expected in cases of significant organophosphate (OP) poisoning, such as headache, sweating or salivation, were reported relatively rarely or not at all. The relative frequency of

symptoms not usually reported in OP poisoning cases, such as chills (feeling cold), cough and loss of appetite suggest that other factors not related to malathion exposure may be responsible for the effects seen. However, there is one report in the literature where 22 seamen exposed to a malathion fog did a report significant excess of symptoms related to appetite and nose and throat (Markowitz et al. 1986). Unfortunately this report does not list the specific symptoms and did not document which cases displayed cholinesterase depression or were diagnosed as OP poisoning.

Another way to examine the available data is to see which cases seemed to have symptoms that were predominantly typical of malathion poisoning. In 6 of the 14 cases reported by affidavits, where 2 or more symptoms are reported, most of the symptoms were consistent with malathion poisoning. Similarly, for the 17 cases interviewed by a nurse, 7 of the individuals reported symptoms predominantly typical of malathion poisoning. It is not possible from this evidence to conclude that even a single case was indeed due to malathion poisoning only that there were a number of possible cases. More documentation of the exposure and the symptoms would be needed to draw a firmer conclusion.

The most serious and overriding deficiency of these reports is the lack of direct examination by a physician, cholinesterase tests, and follow-up investigation. Given that these cases were serious enough to produce affidavits, it is difficult to understand why the cases were not considered serious enough to seek immediate medical attention. Once seen by a physician, symptoms could be properly documented. Physicians in California are required by State law under penalty of fine to report all such pesticide related cases which are then investigated by county and State investigators. This would have permitted a more definitive assessment.

References

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cc: Joanne Edwards (H7508C)
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Malathion file
Correspondence file
Circulation