

Sci 275  
riskassessment  
assignment



**ASSIGN  
BUSTER**

Risk Assignment Assessment SCI 275 Genericville Star Articles written by:  
Raven Neece Reference ATSDR. 2001. Toxicological profile for Malathion. Draft for Public Comment. Atlanta: US Department of Health and Human Services, ATSDR. ATSDR. 2003. Public Health Statement for Malathion. Draft for Public Comment. Atlanta: US Department of Health and Human Services, ATSDR. 125-75-5 CDC. 1999. Surveillance for acute pesticide-related illness during the medfly eradication program—Florida, 1998. MMWR 48: 1015–18, 1027. EPA. 2000d.

Malathion: Revisions to the Preliminary Risk Assessment for the Reregistration Eligibility Decision (RED) Document. Washington DC: Office of Prevention, Pesticides and Toxic Substances, US Environmental Protection Agency. Golz HH. 1959. Controlled human exposures to Malathion aerosols. AMA Arch Ind Health 19: 53–59 Kahn E, Berlin M, Deane M, Jackson RJ, Stratton JW. 1992. Assessment of acute health effects from the medfly eradication project in Santa Clara County, California. Arch Environ Health 47: 279–84. —————

Risk Assessment of Malathion Malathion is an insecticide spray to control the West Nile Virus, it is being proposed by the City Council. A citizen of Genericville offered to fund an extensive program to spray the air and ground with Malathion and to offer educational programs and precautions. A risk assessment on the use of Malathion in the city involves four steps. The first step is hazard identification, the second step is dose response, the third step involves exposure, and the fourth step is risk characterization.

Based on the risk assessment the city should consider using the Malathion because the risks of the West Nile Virus are greater than the risks of the use of Malathion. There are also many political, social, and economic aspects involved in the consideration to use the Malathion. The political concerns are if the politicians are making the right choice. The social concerns are to get the residents of the city on board. The economic aspects are what hazards, if any, and the long term exposure. The spread of West Nile is a huge concern in the city because of the wet lands that are located here.

There are projected to be 50 cases of West Nile this year in the city if something is not done about it. If Malathion is used it will drop to five. After performing a risk assessment on Malathion based on the four steps, I believe that it would be better to use the Malathion, along with educational programs and precautions. [pic] Hazard Identification In a report made by the agency for toxic substances and disease registry (ATSDR) showed that a human that had five to ten minutes of acute exposure to Malathion had nasal irritation.

A human with intermediate exposure of 42 days at two hours per day had no adverse effects observed. Also in a controlled-exposure study regarding respiratory effects, there were no signs of toxicity during the study, except complaints of nasal irritation when exposed to the highest concentration during the first five to ten minutes. In regards to gastrointestinal effects, there is a self-study of self-reported seamen who may have been exposed to a single cloud of Malathion. They reported problems such as diarrhea, constipation, or painful bowel movements 12 days following the incident.

There was no evidence of actual exposure to the chemical. In regards to renal effects, a study of workers exposed to Malathion, for up to 29 years, found no increase in renal disease. In regards to body weight, men were exposed for one hour twice a day for 42 days, and there were no exposure-related changes in body weight. In regards to reproductive effects, low birth rate, and cancer, studies showed that there was no significant association between exposure and Malathion. [pic] Dose-response assessment [pic]

According to studies, humans that inhaled Malathion for five to ten minutes had nasal irritation, and no other signs of toxicity occurred. If humans inhaled Malathion for 42 days the effect was nasal and eye irritation. However the irritation only occurred during the first five to ten minutes of each exposure, and no effects were observed on erythrocyte or plasma cholinesterase activity (Golz, 1959). By any means of exposure, Malathion enters your body quickly and passes into the bloodstream. However, once in your bloodstream, Malathion can go to many organs and tissues.

Most of the Malathion is broken down in your liver into other substances, called metabolites. One of these metabolites is more harmful than Malathion. Malathion and its metabolites do not tend to accumulate in the body, and leave mostly in your urine within a few days (ASTRD, 2003). [pic] Exposure Assessment When Malathion is released in the air, also known as aerial spraying, it exists solely as a vapor in the atmosphere and degraded by reaction with photo chemically produced hydroxyl radicals. The estimated half-life for this reaction in the air is five hours.

When Malathion is put in the soil it is highly mobile. Biodegradation in soil is rapid, with 80% to 95% biodegradation typically occurring in ten days, but may be much faster depending on the soil content. Its half-life in soils is estimated by various people that range from one day to six days. This depends on the pH of the degradation pathway. The general population is not likely to be exposed to large amounts of Malathion. Some exposure to the residue of Malathion is possible though. Studies have shown that Malathion has been detected in food and atmosphere samples.

People living in or near the areas of heavy Malathion use are at increased risk for exposure to larger amounts through dermal contact with contaminated plants, by inhalation of the mist, or by ingestion of water or foodborne residue. Dermal contact is the major route of exposure. Ingestion also can be an important route, but inhalation has not shown significant route of exposure to Malathion (ASTRD, 2001). Risk Characterization The Florida Department of Health attempted to evaluate adverse health effects potentially related to Malathion.

The estimated crude rate of malathion-related illnesses associated with the eradication effort was calculated at nine cases per 10,000 residents in the exposed areas. The report highlighted four cases in humans, two of whom were exposed after spraying: One person exposed while removing a pool cover with malathion residue, one person was exposed by direct contact with pesticide residue on fresh grass trimmings, one person worked outside on his roof during aerial spraying, and one person suffered an acute exacerbation of a chronic asthmatic condition (CDC, 1999).

California also conducted a survey where no evidence was found that indicated the aerial spraying of Malathion caused any detectable increase in symptoms (Kahn, 1992). Using these proposed values for the risk assessments for public health mosquito uses, EPA (2000d) concluded that the risk estimates for adults and toddlers for combined dermal and inhalation exposure did not exceed EPA's levels of concern for residential bystander inhalation and dermal exposure from truck fogger and aerial ULV mosquito-control applications. This assessment included incidental oral ingestion for hand-to-mouth activities. [pic]