HEALTH EFFECTS OF PESTICIDES:
State of Knowledge Review

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Prepared for the Non-Toxic Pacific Grove working group of
Communities for Sustainable Monterey County
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Designed to Kill

Pesticides are a large group of chemicals that include Insecticides, Herbicides, Rodenticides, Fungicides, and Fumigants. Together, they include more than 20 classes of chemicals, many of which have not been tested prior to their widespread usage in the environment (AAP, 2012). A wide range of pesticides are known endocrine disruptors (Mnif et al., 2012) and carcinogens (Dich et al., 1997). Like the harmful effects of DDT in our recent past, these chemicals have been shown to have a wide range of impacts beyond their intended uses in landscape maintenance and agriculture, including negative effects on wildlife and human health (Mnif et al., 2012).

The Hidden Costs

Both the American College of Obstetricians and Gynecologists (ACOG) and the American Academy of Pediatrics (AAP) have issued policy statements explaining the negative health effects of pesticides for children, pregnant women, and humans through their life course. While we cannot always see or smell pesticides, chronic exposure carries serious health consequences. Exposure is linked to cancers; endocrine, immune and reproductive disorders; and Parkinson’s disease (President’s Cancer Panel, 2010; Sanborn et al., 2004). The ACOG notes that the scientific evidence from the past 15 years shows profound reproductive effects from exposure to environmental agents since World War II that is beyond any potential genetic changes in humans. These effects result from both preconception and prenatal exposures (ACOG, 2013).

Vulnerable Populations

Adults and children are all impacted by exposure to pesticides. Children and pregnant women are particularly vulnerable to the effects of these chemicals (AAP, 2012). Children encounter pesticides daily, and are uniquely susceptible to these chemicals. Pregnant women similarly are susceptible to these chemicals, through their effects on developing fetuses: prenatal exposures can have lifelong consequences for both males and females (ACOG, 2013; Endocrine Society, 2005). Prenatal and childhood exposure to pesticides is significant for a variety of reasons (Table 1).
In addition, the ACOG notes that pesticide exposure is an environmental justice issue, with many low-income, minority communities experiencing greater exposure to harmful chemicals. Low-wage immigrant populations often work in positions that require higher levels of occupational exposure, putting themselves and their families at greater risk for negative health outcomes, whether through direct exposure, or the negative health impacts to a loved one.

**Recommendations**

The American Academy of Pediatricians recommends that “the wide range of consequences of pesticide use on children and families should be considered” when considering existing or new government policies. Among their suggested recommendations are to:

- Promote community right-to-know procedures
- Increase labeling in both English and Spanish language
- Promote practices that minimize children’s exposure, such as bait stations
- Increase incentives for the use of IPM

<table>
<thead>
<tr>
<th>Exposure</th>
<th>Effects</th>
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<td>Because children have significantly more hand-to-mouth movements and often play closer to the ground, they are more susceptible to ingesting pesticides</td>
<td>Prenatal exposure to pesticides is associated with increased risk of pediatric cancers</td>
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<td>Children are more exposed to chemicals through air, food, drinks, and skin contact relative to their body weight than are adults</td>
<td>Prenatal exposure to pesticides adversely affects male genital development and fertility</td>
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<td>Because children’s bodies are still developing, their organs and immune systems are less able to detoxify contaminants from their bodies</td>
<td>Pesticide exposure is linked to pediatric cancers</td>
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<td>Children and adolescents often spend many hours in parks and on lawns and athletic fields</td>
<td>Pesticide exposure is linked to reductions in IQ, attention/hyperactivity disorder, and autism</td>
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<td>Pesticide exposure can interfere with lifelong reproductive function in females, including puberty, menstruation, fertility, and menopause.</td>
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The ACOG similarly advocates that “the evidence that links exposure to toxic environmental agents and adverse reproductive health outcomes is sufficiently robust” to join leading scientists and clinical practitioners in a call for “timely action to identify and reduce exposure to toxic agents” (ACOG, 2013, 1). They note that individuals alone can do little to limit exposure to toxins in the air and water, and as perpetuated through poverty. They call for the implementation of the Precautionary Principle, which states that even without scientific consensus, “when an activity raises threats of harm to human health, precautionary measures should be taken” (ACOG, 2013, 3). This position has similarly been advocated by the Endocrine Society and American Thyroid Association (Endocrine Society, 2005).

References


The mission of the Environmental Studies Program at California State University Monterey Bay is to develop students and communities with the knowledge, skills, and compassion to promote social and environmental justice and sustainable communities.