

## **Analysis of Environmental and Health Effects of Pesticides on Golf Courses**

**Gavin Kim**

Cresskill High School, USA

### **Abstract:**

Over the past 30 years there have been many studies and concerns about the environmental and health effects of chemicals used on golf courses. Because any visual imperfection or problem with performance is put under scrutiny, many courses require an arsenal of pesticides such as insecticides, fungicides, and herbicides in order to maintain pristine fairways and greens. Their widespread use and subsequent exposure to millions of people each year has attracted attention to any potential environmental and health risks that come with using pesticides in the golf course turf industry. On the environmental side, this review found that the pesticide levels in runoff and sediment samples were under USDA regulations but still had a harmful impact on the biota of the environment around the golf courses. On top of being repeatedly applied, many of these chemicals were found to stay in the soil and waterways long after the original application, which leads to prolonged environmental contamination and increased risks to both ecosystems and human health through bioaccumulation and runoff. In addition to pesticides, phosphorous based fertilizers were found to be disrupting the natural nutrient cycle in many environments. On the health side, chemicals like Chordane, Dichlorodiphenyltrichloroethane (DDT), and Lindane were found to be linked to Non-Hodgkin's Lymphoma. In addition to this chemicals like Chlorothalonil were found to be linked to cancer and neurological disorders. Overall, this review found that current environmental regulations were inadequate and additional safety measures are necessary in order to mitigate the risks that come with using pesticides in the turf management industry.

### **Keywords:**

Cancer, environmental science, golf courses, health, pesticides.