

Phenoxy Herbicides (2,4-D)

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72.1 INTRODUCTION

Phenoxy herbicides have been commercially available for over 50 years and are the most widely used family of herbicides worldwide. 2,4-Dichlorophenoxyacetic acid (2,4-D), the most common of the phenoxy herbicides, is one of the best-studied agricultural chemicals. This chapter focuses primarily on 2,4-D since it is the most widely used herbicide and the majority of the literature on phenoxy herbicides pertains to studies with 2,4-D.

The safety of using phenoxy herbicides was first questioned when a series of case-control studies was published by Lennart Hardell in the late 1970s, in which he hypothesized that the occurrence of three rare forms of cancer (Hodgkin's disease, soft tissue sarcoma, and non-Hodgkin's lymphoma) in workers was related to exposure to these herbicides along with dioxins known to contaminate 2,4,5-trichlorophenoxyacetic acid (2,4,5-T). Since that time, several human and animal studies have been conducted which do not lend support to his hypothesis. As well, several expert panels have been convened to assess the safety of 2,4-D, and all have concluded that there is no evidence to suggest that 2,4-D poses any risk to human health under its intended conditions of use. In fact, 2,4-D has been classified by the U.S. Environmental Protection Agency (EPA) as a Group D (not classifiable as to human carcinogenicity) because "the evidence is inadequate and cannot be interpreted as showing either the presence or absence of a carcinogenic effect."

Because of the vast amount of data available on 2,4-D, this chapter provides a brief summary and overview of the available studies.