

## 1.0 Introduction

Agricultural chemicals have been historically manufactured in a plant, currently owned by Dow AgroSciences Ltd, located in the Paritutu area of New Plymouth. Products manufactured at the plant included the phenoxy herbicide 2,4,5 trichlorophenoxyacetic acid (2,4,5-T). Dioxins<sup>2</sup> (in particular 2,3,7,8-tetrachlorodibenzo-p-dioxin or 2,3,7,8-TCDD) were a manufacturing contaminant of 2,4,5-T. 2,3,7,8-TCDD is recognised as a human carcinogen, and may cause a variety of other adverse health effects, including effects on the immune system, reproduction and development (Smith and Lopipero, 2001).

Some people within the New Plymouth community, and in particular those living in the suburb of Paritutu, have expressed concern that dioxin may be present in the soils in the area. Pattle Delamore Partners Limited (PDP) has been engaged to carry out soil sampling and analysis for dioxin from residential properties in Paritutu, on behalf of the Ministry for the Environment. This work is part of wider government activity on dioxins, both in New Plymouth and nationally. The Institute of Environmental Science and Research (ESR) are managing the project, in conjunction with other government studies.

The objective of the work, as set out in the study brief (appended to the Study Design and Sampling Protocol, PDP 2002) was to:

*Measure dioxin concentrations in residential properties close to the Dow AgroSciences (formerly Ivon Watkins-Dow [IWD]) site in Paritutu, New Plymouth, establishing soil concentrations both laterally and with distance from the factory source.*

The study was carried out in such a manner that the findings could contribute to subsequent studies for:

- i) the identification of individuals who may have been maximally exposed to dioxins when resident in New Plymouth, and
- ii) the assessment of human health risks to the population from exposure to dioxin.

The assumption is that long-stay residents, or residents in the area during the period of 2,4,5-T manufacturing at the Dow plant, will have been exposed to higher levels of dioxin in the soil, derived from emissions and discharges from the plant, than short-stay or more recent residents. However, it is not the intent of this study to undertake a health risk assessment, or to identify actual maximally exposed individuals. It was also not the intent of the study to establish the exact source or period of discharges from the plant.

The study is intended to integrate with a study to measure dioxin in blood serum being carried out by ESR on behalf of the Ministry of Health. This study, described in Baker

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<sup>2</sup> The collective term for polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs). 2,3,7,8-TCDD is also commonly referred to as dioxin.

*et al.*, (2002, in prep.), is intended to identify a group of long-term, most likely highly exposed, Paritutu residents, obtain blood serum samples and compare the dioxin levels in the blood fats with a New Zealand population group from an earlier Ministry for the Environment study (Buckland *et al.*, 2001).

This report sets out the background to the current study, describes the study design, sampling protocols and fieldwork, and then presents the concentrations of dioxins measured. The results are compared with previous sampling carried out in the area, with studies elsewhere in New Zealand and with New Zealand and overseas guidelines for 2,3,7,8-TCDD in soil.