

**Report On Agrichemical Spray
Drift Incidents Reported To
Public Health Services,
Regional Councils,
and the National Poisons Centre, 2002**

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by

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TABLE OF CONTENTS

SUMMARY	ii
RECOMMENDATIONS	iii
INTRODUCTION.....	1
RESULTS AND DISCUSSION	2
Public Health Services	2
National Poisons Centre.....	5
Regional Councils	5
Painted Apple Moth Spray Programme (Ministry of Agriculture and Forestry).....	6
Late Notifications from 2001	6
SUMMARY AND CONCLUSIONS	7

LIST OF TABLES

Table 1. Summary of Spray Drift Related Complaints, Exposures and Reported Adverse Health Effects by Health District (2002)	4
Table 2. Responses to Complaints January 1, 2002 – December 31, 2002.....	4
Table 3. Number of SprayDrift Complaints by Type of Affected Location January 1, 2002 – December 31, 2002.....	4
Table 4. Method of Pesticide Application Associated with SprayDrift Complaint January 1, 2002 – December 31, 2002.....	4
Table 5. Agrichemicals involved in Spray Drift Complaints Reported through DriftNet, 2002.....	5

SUMMARY

The aim of this project is to effectively monitor the incidence of spray drift events with potential, reported or alleged health effects. This is achieved through a surveillance system, *DriftNet*, which collects information on spray drift complaints and incidents reported to Public Health Service staff, and any subsequent investigations. This report summarises the information recorded on *DriftNet* during 2002, and compares it to data from 2001. In addition, information on spray drift queries and complaints received by several Regional Councils, and the National Poisons Centre (NPC) are included.

For the year 2002, there were nine complaints reported by Public Health Services, plus three late notifications from 2001, compared with 25 notifications in 2001. Twenty five individuals were reported as having some symptoms of adverse health effects from these spray drift events, but none of these cases were clinically confirmed by a medical practitioner as being caused by agrichemical exposure.

The systematic spraying for painted apple moth in the Auckland area and complaints of health effects from resulting exposures was a new development in the spraydrift area in 2002/2003, but thus far the data on these complaints remain unavailable to ESR.

RECOMMENDATIONS

- 1) That this report is distributed to all Public Health Services, the Spray Drift Working Party, the Ministry for the Environment, ERMA, and the Parliamentary Commissioner for the Environment, for their information.
- 2) That this report be summarised in the New Zealand Public Health Report replacement publication (InterPHace).
- 3) That it is noted that spray drift self-reported illnesses notified to Public Health Services in New Zealand remain at a low level. While many more calls and queries appear in statistics of Regional Councils and the NPC, only a fraction of these incidents (about 50% of cases for NPC, and less than 10% of cases from Councils) included a report of adverse health effects.
- 4) That the statistics on Painted Apple Moth spraying be incorporated into national statistics on spray drift complaints and injuries when the data become available.

INTRODUCTION

This report details agricultural spray drift incidents reported to Public Health Services (PHSs) during January to December 2002. For comparison with these statistics, this report also includes spray drift related calls to the NPC, and spray drift complaints from several Regional Councils (Auckland, Hawkes Bay, Wellington, Northland, Bay of Plenty, and Otago) as well as the number of calls to MAF regarding the painted apple moth.

When PHSs receive reports of agricultural spray drift incidents they are recorded locally on *DriftNet* software. *DriftNet* records information on complaints, associated illness and investigations. Each year in January/February, data recorded by PHSs for the previous year are forwarded to ESR where they are collated nationally and a report produced. This is the fourth report on *DriftNet*, which covers the 2002 calendar year.

RESULTS AND DISCUSSION

Public Health Services

During 2002, nine complaints were recorded on *DriftNet* (Table 1), compared with 25 for the year 2001. Also reported are an additional three complaints that had occurred late in calendar year 2001 and were not included in last year's report. Because of the low number of incidents, the discussion that follows is largely descriptive and qualitative.

Of the nine complaints reported in 2002, four health districts reported data from spray drift complaints and incidents, compared to eight in 2001. Four complaints were from Christchurch, one from Dunedin, two from Tauranga, and two from Rotorua. Of the nine complaints, there were five exposure scenarios, two of which resulted in symptoms of illness in 25 people. However, although 25 people were involved, in none of these cases were symptoms confirmed with a doctor's diagnosis. In one case the exposed person was told by a homeopathic doctor that susceptibility to specific infectious disease outcomes (*Legionella* and *Streptococcal pneumonia*) were linked with exposure to specific agrichemical agents. This kind of misinformation could serve to confuse public perceptions of actual risk from exposure to agrichemicals.

Three of the nine complaints reported required some form of follow-up action (Table 2). Of these, two were promptly resolved by the PHS staff without the need for a "*Driftnet* incident investigation", by contacting the interested parties and determining the level of risk and the appropriate course of action. One of the three cases undergoing investigation by PHS was referred to the Regional Council.

Herbicides were involved in five of the nine complaints. Four complaints were unable to specify the substance in use.

Eight of the complaints originated from private residences and one was from a school (near Tauranga) (Table 3).

The method of pesticide application for six of the nine spray drift complaints was reported. Helicopter application was involved in two of the complaints, while ground application (tractor with boom) and fixed wing aircraft were involved in one complaint each. Hand held application resulted in two complaints. Three complaints had no method of application recorded (Table 4).

It became apparent in November 2002 that some PHS were no longer able to run *DriftNet* due to system upgrades and loss of software compatibility. Therefore, in the course of this project, the existing *DriftNet* software was upgraded to be compatible with modern PHS computer systems, and this upgrade was sent to all PHS. In addition, we have been exploring the feasibility of using a central website for surveillance of chemical injury notifications from hospitals, and possibly incorporating an analogous national *DriftNet* model for spray drift complaints. This would also allow a standard reporting system to be used by different Regional Councils and other agencies that deal with spraydrift complaints.

DriftNet currently collects far more detail than is necessary for national level surveillance of these events. While this level of detail is required for local authorities to track and follow their own investigations, it is not necessary to collect and analyse all of the variables on a national scale, especially if the system moves to the internet. To facilitate the collection and analysis of national data on spray drift incidents, we previously proposed that a shortened national data set be developed, which is a subset of the full *DriftNet* data. Such a shortened national set is more likely to be utilised by Regional Councils. We are in process of developing a website prototype that initially will allow the visualisation of this on-line data capture and dissemination tool. Ultimately, this website would be accessed by Councils as well as PHS staff and ideally would accept direct transfers from *DriftNet* to avoid duplication of data entry by PHS.

The data set includes:

Unique case identifier

Personal details

- age
- gender

Geographical details

- TLA of exposure

Time of exposure

- date of incident

Exposure information

- were people exposed? Yes/no
- yes – how many people?
- symptoms? Yes/no
- yes – how many people?
- symptoms or illness confirmed by a physician as agrichemical related? Yes/no
- Was there damage to crops or property from the drift? Yes/no

Chemical information

- Name of agrichemical product (drop down list)

Spray information

- Method of spraying (list of 6 options)

Local investigation information

- Was there a local investigation? Yes/no
- Issue resolved or ongoing?
- Was the case referred to another agency (which one)?
- Person reporting/investigating the incident (free text)
- Agency/location (PHU drop down list, regional council drop down list, NPC, other)

Table 1. Summary of Spray Drift Related Complaints, Exposures and Reported Adverse Health Effects by Health District (2002)

Health District	No. Complaints	No. Exposures	No. Illnesses ^a
Christchurch	4	3	1
Otago	1	1	0
Rotorua	2	0	0
Tauranga	2	1	24 ^b
ALL PHS	9	5	25

^a These are self-reported illnesses, unconfirmed by a doctor's diagnosis.

^b One case in Tauranga reported a number of ill children and staff at a school over a period of time (unknown onset). The symptoms were non-specific in nature and not judged to be consistent with agrichemical exposure. None were confirmed as related to spray drift by a doctor.

Table 2. Responses to Complaints January 1, 2002 – December 31, 2002

Health District	Response			Unknown	Total
	No Action	PHS Investigation	Outside Referral		
Christchurch	4				4
Otago		1			1
Rotorua	1		1		2
Tauranga	1	1			2
ALL	6	2	1	0	9

Table 3. Number of SprayDrift Complaints by Type of Affected Location January 1, 2002 – December 31, 2002

Health District	Location						Total Complaints Reported
	Private Residence	Public Area	School	Workplace	Other	Not Recorded	
Christchurch	4						4
Otago	1						1
Rotorua	2						2
Tauranga	1		1				2
ALL	8		1				9

Table 4. Method of Pesticide Application Associated with SprayDrift Complaint January 1, 2002 – December 31, 2002

Health District	Method of Application						Total
	Helicopter	Fixed Wing Aircraft	Vehicle	Hand Held	Other	Not Recorded	
Christchurch				2		2	4
Otago	1						1
Rotorua	1	1					2
Tauranga			1			1	2
ALL	2	1	1	2		3	9

Table 5. Agrichemicals involved in Spray Drift Complaints Reported through DriftNet, 2002

Otago	Tauranga	Christchurch	Rotorua
<ul style="list-style-type: none"> • Answer 	<ul style="list-style-type: none"> • Hi Cane • Unknown 	<ul style="list-style-type: none"> • Banvine (2,4-D) • Interceptor • Unknown (2) 	<ul style="list-style-type: none"> • Unknown • Pasture Clear

* number of cases given in parentheses

National Poisons Centre

There were 29 calls to the NPC relating to spray drift for the calendar year 2002. Fifteen of these calls involved a reported exposure with symptoms or signs. The remaining calls were primarily for advice or general concern relating to possible exposure to agrichemicals. In several cases, the exposure was not to agrichemical spray drift *per se* (i.e. through a spray event at an agricultural setting), but to agrichemicals by other means, and in some cases no human exposure had occurred.

Substances reported to the NPC as causing symptoms or signs (2002):

Answer

Black Flag Fly and Insect Killer (pyrethrum active ingredient)

Calcium chloride

Cypermethrin

Gild Rose Spray

Herbicide (unspecified) (2 calls)

Janola

Roundup (2 calls)

Maldison Rose Spray

Mavrik

Tordon

Trounce

Watkins Weedkiller (2 calls)

30 Seconds

Regional Councils

The following Regional Councils were contacted early in 2003 and asked to provide a summary of spraydrift related complaint data to ESR: Auckland, Hawkes Bay, Wellington, Northland, Canterbury, and Otago. From the data presented by Councils, it appears that the overall incidence of agrichemical spraydrift complaints and incidents is grossly under represented in *DriftNet*.

Total spray drift complaints reported to surveyed Regional Councils 2002.

Auckland:	18
Hawkes Bay:	43
Bay of Plenty:	56
Wairarapa:	0
Canterbury:	6
Otago:	20
Total:	143

Several of the Councils indicated that they make a distinction between agrichemical drift and sprays of fertilisers and 'top-dressing'. However, complaints are fielded for both types of events. The reason for this distinction is unknown but presumably to prioritise responses and actions, as an exposure to an active ingredient has a higher hazard potential than most fertilisers.

While *DriftNet* only captures a small percentage of the overall complaints about spray drift, the complaints to Councils surveyed rarely reported human health symptoms. In Hawkes Bay, which contained detailed accounts of each specific incident, only three of the 43 (7%) complaints had any mention of an adverse health effect as the reason for the complaint. However, it should be noted that none of the three cases were reported to the Public Health Service in Napier. In the Bay of Plenty, three of 56 (5%) complaints involved a reported health effect. It is hoped that with an on-line resource for reporting such events, that more accurate statistics will emerge on the effect of agrichemical spray drift on human health.

Painted Apple Moth Spray Programme (Ministry of Agriculture and Forestry)

Ministry of Agriculture and Forestry queries regarding Painted Apple Moth spraying in Auckland for the 2002 calendar year were sought for inclusion into this report, but these data were not available at the time of this report.

Late Notifications from 2001

Three notifications of spraydrift complaints were sent to ESR through the DriftNet system in early 2003 that related to events that occurred in calendar year 2001.

These cases included two from Dunedin and one from Marlborough District. While these complaints are not factored into the 2002 statistics, they are discussed here for completeness.

Of the three cases, two involved reported exposures to spraydrift, but there were no reports of injury/illness stemming from these exposures. The two cases involving an exposure were followed up with an investigation by PHU staff and were promptly resolved.

The chemicals involved in the three complaints include one fertiliser, one herbicide, and one unspecified compound.

Two of the complaints originated from events that occurred in public places and one was from a private residence. The method of application for the three complaints included fixed wing aircraft, helicopter, and unspecified method.

SUMMARY AND CONCLUSIONS

The *DriftNet* system continues to collect what are likely to be the most serious cases of agrichemical spray drift incidents from a public health perspective. The number of complaints has fallen to 9 this year from 28 (25 reported in last year's report plus the three late complaints received this year) in 2001. The *DriftNet* software has recently been upgraded and sent to all PHS for installation, and this may facilitate use of the system in those areas that have been experiencing difficulties using the old system this year.

Regardless of the system status, it is apparent that the public health burden of agrichemical drift exposure is small. Though 25 people were reported as experiencing adverse health effects, none of the symptoms recorded in *DriftNet* were confirmed by diagnosis of a medical practitioner.

In an attempt to better understand the true magnitude of spray drift complaints and reported symptoms from exposure, we included data from the NPC and several Regional Councils. These data reveal that *DriftNet* misses some cases involving reported health effects when these cases are first captured by local authorities or the NPC. There were 25 cases of reported illness stemming from spray drift in *DriftNet*, compared with a similar number (over 20) from the Regional Councils surveyed. While the total number of such cases nationally is unknown, these figures would be expected to be the majority.

The *DriftNet* system, as both a local investigation tool and a national data gathering mechanism, is inherently frail and prone to underuse due to its isolation from a wider public health surveillance system. While some PHS use *DriftNet* and the accompanying *Guidelines for the Investigation of Agrichemical Spray Drift Incidents* effectively to assist in investigations at a local level, the collection and analysis of these data on a national level should ideally be included under a larger framework. It has been proposed that this be done as part of the Chemical Injury Surveillance System, and that both systems for national data collection are combined electronically. ESR, supported by the Ministry of Health, is working toward that end. The combined system would then be part of a broader public health surveillance system to examine issues of exposure and health effects from a wide range of acute and chronic exposure conditions.