

Chemical Injury Surveillance for New Zealand, 2005

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**Chemical Injury Surveillance
for New Zealand, 2005**

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CONTENTS

EXECUTIVE SUMMARY	i
1. INTRODUCTION	1
1.1. Objectives of the CISS.....	1
1.2. Scope of the CISS	1
1.2.1. Inclusions.....	1
1.2.2. Exclusions.....	2
1.3. Definitions	2
1.4. Literature Review	2
1.5. Current Situation.....	2
1.6. Other Approaches Trialled to Date.....	4
1.6.1. Paper and Email Based System	4
1.6.2. Electronic System.....	4
1.7. Incorporation of the email and electronic based approaches into the comprehensive surveillance system.....	5
1.8. This Report	5
2. BACKGROUND OF THE COMPREHENSIVE CHEMICAL INJURY SURVEILLANCE SYSTEM	6
2.1. Introduction.....	6
2.2. Coronial Services Office (CSO) Data.....	6
2.3. NZHIS Data	6
2.4. Public Health Unit (PHU) Data	8
2.5. National Poisons Centre (NPC) Data.....	8
2.6. DriftNet (Spraydrift) Data	8
3. PROGRESS ON NATIONAL IMPLEMENTATION AND DEVELOPMENT OF A MEDIUM TERM STRATEGY, 2005/2006.....	9
4. RESULTS FROM THE COMPREHENSIVE SURVEILLANCE SYSTEM FOR 2005.	11
4.1. Introduction.....	11
4.2. Summary of Key Statistics	11
4.2.1. 2005 National Analysis	11
4.2.2. 2005 Auckland DHB Analysis	12
4.2.3. 2005 Hutt DHB Analysis.....	13
4.2.4. 2005 Capital and Coast DHB Analysis	14
4.2.5. 2005 Wairarapa DHB Analysis	15
4.2.6. 2005 West Coast DHB Analysis.....	15
4.2.7. 2005 Southland DHB Analysis	16
4.2.8. 2005 Specific Analyses.....	17
4.2.8.1. Poisonings in Children aged less than 5 years.....	17
4.2.8.2. Paracetamol Poisonings.....	17

4.2.8.3. Ethanol Poisonings	17
4.2.8.4. Poisonings Involving HSNO Substances	18
4.2.9. Coronial Service Office Data for 2003 and 2004	18
4.3. Detailed National Analysis (2005)	20
4.3.1. Spraydrift analysis	25
4.4. Detailed Auckland DHB Analysis (2005)	27
4.5. Detailed Hutt DHB Analysis (2005).....	29
4.6. Detailed Capital and Coast Analysis (2005).....	30
4.7. Detailed Wairarapa Analysis (2005).....	31
4.8. Detailed West Coast DHB Analysis (2005)	33
4.9. Detailed Southland DHB Analysis (2005).....	34
4.10. Specific Analyses.....	35
4.10.1. Poisonings in Children Aged Less Than 5 Years	35
4.10.2. Paracetamol Poisonings	36
4.10.3. Ethanol Poisonings	36
4.10.4. Poisoning Involving HSNO Substances	37
5. CORONIAL SERVICE OFFICE DATA FOR 2003 AND 2004	38
6. CONCLUSIONS AND RECOMMENDATIONS.....	45
APPENDIX 1	47
APPENDIX 2	63
REFERENCES	64

LIST OF FIGURES

Figure 1: Chemical injury death rates by DHB, 2005 (as of December 2005).....	21
Figure 2: NZHIS poisoning rates by DHB, 2003-2005.....	22
Figure 3: NZHIS poisoning rates by age and intent, 2005.....	23
Figure 4: Percentage of poisonings by sex for national CSO and NZHIS data, 2005.....	24
Figure 5: Percentage of European and Maori chemical injury deaths deemed intentional, 2003-2005.	25
Figure 6: Chemical injury deaths by intent, 2003 and 2004.....	38
Figure 7: Number of chemical injury deaths by DHB, 2003 and 2004.....	39
Figure 8: Chemical injury death rates by DHB, 2003 and 2004.	39
Figure 9: Chemical injury death rates by age group, 2003 and 2004.....	40
Figure 10: Chemical injury deaths by age group and intent, 2003.....	41
Figure 11: Chemical injury deaths by age group and intent, 2004.....	41
Figure 12: Chemical injury death rates by ethnicity, 2003 and 2004.....	42
Figure 13: Chemical injury death rates (2003/2004 combined) by NZDep2001.	43
Figure 14: Top 5 primary substances involved in chemical injury deaths by intent, 2003.	44
Figure 15: Top 5 primary substances involved in chemical injury deaths by intent, 2004.	44

LIST OF TABLES

Table 1: ICD 10 Codes of Interest for Comprehensive Chemical Injury Surveillance	7
Table 2: Number of Spraydrift Complaints Reported by Year	25
Table 3: 2005 National Chemical Injury Data from CSO, NZHIS, PHU and DriftNet by DHB	47
Table 4: 2005 National Chemical Injury Demographic Data from CSO and NZHIS	48
Table 5: 2005 Auckland DHB Chemical Injury Demographic Data from CSO, NZHIS, and PHU	48
Table 6: 2005 Hutt DHB Chemical Injury Demographic Data from CSO, NZHIS, and PHU	49
Table 7: 2005 Capital & Coast DHB Chemical Injury Demographic Data from CSO, NZHIS, and PHU	49
Table 8: 2005 Wairarapa DHB Chemical Injury Demographic Data from CSO, NZHIS, and PHU	50
Table 9: 2005 West Coast DHB Chemical Injury Demographic Data from CSO, NZHIS, and PHU	50
Table 10: 2005 Southland DHB Chemical Injury Demographic Data from CSO, NZHIS, and PHU	51
Table 11: 2005 National Chemical Injury CSO Data by Primary Substance & NZHIS Data by ICD10 Code	51
Table 12: 2005 Auckland DHB Chemical Injury Data from CSO, NZHIS, and PHU by Substance	52
Table 13: 2005 Hutt DHB Chemical Injury Data from CSO, NZHIS, and PHU by Substance	52
Table 14: 2005 Capital & Coast DHB Chemical Injury Data from CSO, NZHIS, and PHU by Substance	53
Table 15: 2005 Wairarapa DHB Chemical Injury Data from CSO, NZHIS, and PHU by Substance	53
Table 16: 2005 West Coast DHB Chemical Injury Data from CSO, NZHIS, and PHU by Substance	54
Table 17: 2005 Southland DHB Chemical Injury Data from CSO, NZHIS, and PHU by Substance	54
Table 18: 2005 Summary Demographic Data for Poisonings in Children Aged Less Than 5 Years	55
Table 19: 2005 Substance by PHU for Poisonings in Children Aged Less Than 5 Years	55
Table 20: 2005 Summary Demographic Data for Paracetamol Poisonings	56
Table 21: 2005 Summary Demographic Data for Acute Ethanol Poisonings	57
Table 22: 2005 HSNO Substances from Combined Hospital Notification Data for Selected Hospitals*	58
Table 23: CSO Chemical Injury Data by District Health Board, 2003 and 2004	59
Table 24: CSO Chemical Injury Demographic Data, 2003 and 2004	60
Table 25: CSO Chemical Injury Data by Substance Class, 2003 and 2004	60
Table 26: CSO Chemical Injury Data by Primary Substance, 2003 and 2004	61
Table 27: Demographics for CSO HSNO Substances, 2003 and 2004 Combined	62

EXECUTIVE SUMMARY

Current Situation

- The Chemical Injury Surveillance System (CISS) presently incorporates national mortality data [sourced from the Coronial Services Office (CSO)], national inpatient hospitalisation data [sourced from the New Zealand Health Information Service (NZHIS)], and national spraydrift data (sourced from the DriftNet surveillance system).
- CISS also incorporates local hospitalisation data including both emergency department and inpatient data notified to Public Health Units (PHUs). Presently data are received from PHUs representing the following District Health Boards (DHBs); Auckland, Hutt, Capital and Coast, Wairarapa, West Coast, and Southland.
- National Poisons Centre (NPC) data are available in a summarised form but a detailed analysis is not possible.
- In December 2005, an amendment to the HSNO Act was made that now requires all diagnosing medical practitioners, in addition to hospitals, to report injuries caused by hazardous substances. Discussions are presently underway with the Ministry of Health (MoH) regarding options for capturing the data and a draft case report form is being prepared.

Results

- *National results (2005):*
 - 113 chemical injury deaths reported from CSO as of 31 December 2005 - data estimated to be 50-60% complete (varies by DHB) as there is a time lag associated with this data.
 - 7358 poisoning hospitalisations (NZHIS), a national rate of 196.9 per 100 000.
 - 18 600 NPC calls categorised as human poisonings.
 - 5 spraydrift complaints.
- *Auckland DHB results (2005):*
 - 7 chemical injury deaths reported from CSO as of 31 December 2005 (data incomplete).
 - 740 poisoning hospitalisations (NZHIS), a rate of 201.2 per 100 000.
 - 1523 Auckland City Hospital poisoning notifications, a rate of 414.1 per 100 000.
- *Hutt DHB results (2005):*
 - 1 chemical injury death reported from CSO as of 31 December 2005 (data incomplete).
 - 153 poisoning hospitalisations (NZHIS), a rate of 116.0 per 100 000.
 - 190 Hutt Hospital poisoning notifications, a rate of 144.1 per 100 000.

- *Capital and Coast DHB results (2005):*
 - 5 chemical injury deaths reported from CSO as of 31 December 2005 (data incomplete).
 - 197 poisoning hospitalisations (NZHIS), a rate of 80.1 per 100 000.
 - 408 Wellington/Kenepuru Hospital poisoning notifications, a rate of 165.9 per 100 000.
- *Wairarapa DHB results (2005):*
 - 1 chemical injury death reported from CSO as of 31 December 2005 (data incomplete).
 - 74 poisoning hospitalisations (NZHIS), a rate of 193.7 per 100 000.
 - 37 Masterton Hospital poisoning notifications, a rate of 96.9 per 100 000.
- *West Coast DHB results (2005):*
 - No chemical injury deaths reported from CSO as of 31 December 2005 (data incomplete).
 - 87 poisoning hospitalisations (NZHIS), a rate of 287.5 per 100 000.
 - 34 Grey Hospital poisoning notifications, a rate of 112.3 per 100 000.
- *Southland DHB results (2005):*
 - 6 chemical injury deaths reported from CSO as of 31 December 2005 (data incomplete).
 - 176 poisoning hospitalisations (NZHIS), a rate of 170.3 per 100 000.
 - 201 Invercargill Hospital poisoning notifications, a rate of 194.5 per 100 000.
- *Mortality data for 2003/2004*
 - 231 chemical injury deaths in 2003, and 202 in 2004 as of 31 December 2005 (estimated to be 90% complete). Corresponding annual rates of 6.2 and 5.4 per 100 000 respectively.
 - Demographic and substance trends were similar for both years.

Medium Term Strategy

- Continue to recognise that the most desirable means of capturing notification data is by integration with patient management systems and a linkage to TOXINZ.
- Issues surrounding this are numerous patient management systems in use and lack of resources to facilitate integration.
- Further notifications from PHUs/hospitals will be readily incorporated into the existing CISS.
- Notifications from medical practitioners should be included during the 2006/2007 financial year.
- Improved communication between PHUs and regional councils regarding spraydrift surveillance is recommended.

1. INTRODUCTION

In 2001, ESR was commissioned by the New Zealand Ministry of Health (MoH) to develop a national Chemical Injury Surveillance System (CISS). The primary legislative statute for the system being the requirement of Section 143 of the Hazardous Substances and New Organisms (HSNO) Act, 1996, which states that all hospitalisations from hazardous substance injury are to be notified to the Medical Officer of Health. In December 2005, the HSNO Act was amended to include notifications by medical practitioners.

The CISS is intended to encompass this requirement, and extend it to achieve the greatest public health utility. Reporting to the CISS is not a legislative requirement, but it is one mechanism through which hospitals can meet their statutory obligations under the HSNO Act. The following describes the objectives and scope of the CISS (adapted from previous ESR reports to the Ministry of Health^{1,2}), provides some definitions, and discusses the current situation and other previously trialled approaches.

1.1. Objectives of the CISS

- a) Improved local surveillance of chemical injuries, by collecting specific data on substance/product, circumstances, and specific susceptible groups, thus allowing for prioritising of resources for facilitating investigations and interventions.
- b) National surveillance of chemical injuries leading to the review of appropriate controls for certain products, and areas for targeted intervention, including restriction of access to methods of (para) suicide, reducing the number of childhood poisonings through reviewing child resistant packaging needs for certain products, and improving workplace practices leading to a reduced number of serious acute injuries from occupational settings.

1.2. Scope of the CISS

1.2.1. Inclusions

The system is intended to cover:

- Injuries (poisonings and chemical burns) caused by inappropriate use of hazardous substances including flammables and explosives
- Injuries caused by inappropriate use of therapeutic substances and alcohol (when classified as food)
- Poison/chemical related hospital admissions (including short stay unit admissions and presentations to Emergency Departments)
- Injuries from hazardous substances that result in a presentation to a medical practitioner (once a reporting mechanism has been finalised by MoH and ESR).
- Fatalities where the primary cause of death was poison/chemical related
- Both intentional and unintentional exposures.

1.2.2. Exclusions

The system is **not** intended to cover:

- Adverse reactions to therapeutic agents when used as intended
- Injuries or deaths where poisoning is a secondary cause (e.g. car crashes)
- Biological food poisoning (e.g. salmonellosis)

1.3. Definitions

“Hospitalisation”: The Ministry of Health has interpreted “hospitalisations” to include all hospital attendances, irrespective of whether the patient is classed as an inpatient or outpatient. The Ministry considers the distinction between overnight stays and brief stays to be irrelevant, but considers that the important element is whether the person was treated as a patient.

“Hazardous substance”: The HSNO Act defines a hazardous substance as a substance which possesses an intrinsic toxicity, ecotoxicity, flammability, capacity to oxidise, explosive, or corrosive property that meet pre-defined thresholds set by the Environmental Risk Management Authority (ERMA). For administrative reasons, certain substances are excluded from ERMA’s jurisdiction, even though they are clearly hazardous under the definition of the Act, because they are regulated under different legislation. Examples of these are human therapeutic drugs in finished form, which are regulated by the Ministry of Health under the Medicines Act and alcohol when classified as a food, which is regulated under the Food Act. These substances are often referred to as “non-hazardous, for the purposes of the HSNO Act”. Since the CISS is an instrument of the Ministry of Health, and is driven by a public health need, the substances included in it extend beyond that defined by ERMA’s regulatory limits. This is why therapeutic drugs and ethanol are included in the system, even though they are not regulated by ERMA per se.

“Injury”: Has been defined by the Ministry in 2001 as “..any physical harm or damage serious enough to warrant medical treatment”.

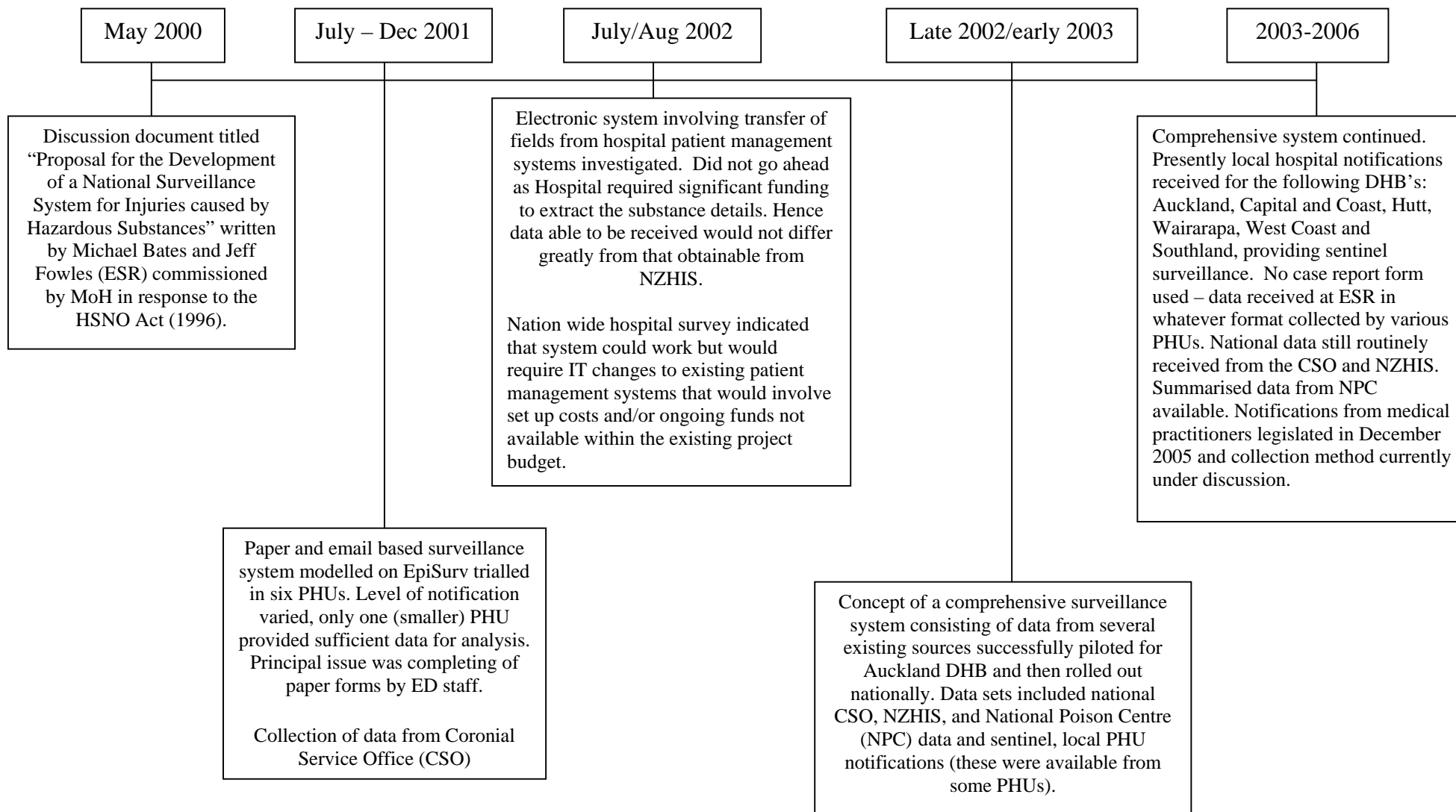
Substances Classes, e.g. Chemicals/drugs of abuse: refer to Appendix 2.

1.4. Literature Review

The literature has been reviewed in a previous report to the Ministry of Health².

1.5. Current Situation

The timeline below presents a summary of the evolution of the New Zealand Chemical Injury Surveillance System (CISS).



Since 2001, three approaches for obtaining hospital notification data have been trialled and/or assessed. The latest, successfully trialled for Auckland in 2003 was a 'comprehensive' surveillance system incorporating poisoning data from the New Zealand Health Information Service (NZHIS), National Poisons Centre (NPC), Coronial Services Office (CSO) and Public Health Service (PHS). Results of this trial were presented in a report to the Ministry of Health in December 2003³.

Despite encountering some issues, the trial was able to provide better functional analyses for local investigation and intervention, as well as national policy and practice, than other systems trialled to date. Specifically, the information provided by each data set could be used to understand better the underlying causes and consequences of exposures to hazardous substances as the data sets covered the spectrum of disease from hazard to exposure to outcome. That is, the NPC data largely addressed hazards and exposure, the NZHIS data captured details of inpatient morbidity, and the CSO mortality data. The PHS data contributed towards the gap in hospitalisation data, e.g. by including emergency patients.

It was therefore proposed that the 'comprehensive' system be implemented as the national chemical injuries surveillance system and extension of the system take place during the 2003/04 financial year. A report prepared for the Ministry of Health addressing this implementation and 2003 statistics was released in June 2004⁴ and a report on 2004 statistics was released in July 2005⁵.

A brief overview on the comprehensive surveillance system and the specific datasets are given in Section 2 of this report.

1.6. Other Approaches Trialled to Date

Prior to the comprehensive chemical injury surveillance system, two other approaches were investigated; a) a paper and email based system and b) an electronic system. As further details on the first are given in a 2002 MoH report⁶ and details on both are given in the 2003 MoH report³, only a brief overview is presented here.

1.6.1. Paper and Email Based System

- Trialled July-December 2001 in six PHS.
- Modelled on the national notifiable disease system (EpiSurv).
- Level of notification varied greatly from region to region with only one (smaller) region providing sufficient data for subsequent analysis.
- Number of issues, principally time to complete paper forms.

1.6.2. Electronic System

- Electronic transfer of details from the hospital system.
- Cases to be identified based on ICD 10 codes.
- Discussion held regarding trialling at Middlemore Hospital but fields which could be obtained without significant additional funding would not differ to that sent to NZHIS as part of the National Minimum Data Set.

- Nation-wide hospital survey indicated that system could work but would require IT changes to existing patient management systems that would involve set up costs and/or ongoing funds.
- Thus with appropriate funding, an electronic system may be able to be implemented as hospitals update and renew their patient management systems.

1.7. Incorporation of the email and electronic based approaches into the comprehensive surveillance system

While not relying solely on PHS notification data to obtain a picture of the burden of disease from chemical injuries, the comprehensive surveillance system does incorporate data from this source.

Experiences with the paper based and electronic systems showed that no one approach will work in all settings and that local circumstances would dictate local data quality and capture practicalities. Thus the paper based or electronic systems may work for some PHS and data captured by either of these or even alternative means can be incorporated into the comprehensive system.

1.8. This Report

This report provides a brief overview of the comprehensive surveillance system before detailing its continuation during the 2005/2006 financial year. Summary statistics from the various data sources for 2005 are then presented as are additional CSO analyses pertaining to 2003 and 2004.

2. BACKGROUND OF THE COMPREHENSIVE CHEMICAL INJURY SURVEILLANCE SYSTEM

2.1. Introduction

A brief overview of the comprehensive system is given below. More detail can be sourced from the 2003 MoH report³.

- Different health exposures and injuries result in different contacts with the health system, e.g. some injuries may be attended to in the home, others would involve a visit to a GP and/or be hospitalised whilst others may ultimately result in death with or without receiving medical attention. Data from several sources are therefore required to make up a comprehensive surveillance system.
- By implementing a surveillance system which looks at several health outcomes (as opposed to just hospital morbidity) plus exposure and hazard data, a better picture of the health effects attributable to hazardous substances/chemicals can be gained.
- The following data sources have been or are incorporated into the comprehensive surveillance system: Coronial Services Office, NZHIS, Public Health Units, the National Poisons Centre and DriftNet.

2.2. Coronial Services Office (CSO) Data

- All deaths by acute chemical poisoning are deemed to be suspicious and thus should undergo a coroners inquest.
- Files are stored at the national Coronial Services Office (CSO) in Wellington.
- Case demographics, circumstances surrounding death including intent, and toxicology results are available from CSO files.
- Although initially obtained manually, ESR now receives much of this data electronically. ESR has been obtaining CSO data since 2001.
- The main drawback associated with the coronial data is timeliness. It is estimated that by the end of a given year, approximately only 50-60% of cases for that year are available. By the end of the following year, it is anticipated that 90-95% of cases for the preceding year will have files available to access.
- The small number of chemical injury deaths means caution is involved when interpreting data, especially rates.

2.3. NZHIS Data

- Public hospitals are required to provide NZHIS with data known as the National Minimum Data Set (NMDS) for all **inpatients** (those admitted to hospital. Note that the criteria for classification as an inpatient differs between hospitals).
- Hospitalisations with ICD 10 codes of interest (Table 1) can be identified and the relevant data obtained from NZHIS.

- Data includes basic demographics, domicile code, admission and discharge date, and International Classification of Disease (ICD) version 10 codes.

Table 1: ICD 10 Codes of Interest for Comprehensive Chemical Injury Surveillance

ICD 10 Code	Description
<i>Broad description of code groupings</i>	
X60 – 69	Intentional self-poisoning
X40 – 49	Unintentional poisoning
Y10 – Y19	Poisoning, undetermined intent
<i>X60-X69 Intentional poisoning by and exposure to:</i>	
X60	Nonopioid analgesics, antipyretics and antirheumatics
X61	Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified
X62	Narcotics and psychodysleptics [hallucinogens], not elsewhere classified
X63	Other drugs acting on the autonomic nervous system
X64	Other and unspecified drugs, medicaments and biological substances
X65	Alcohol
X66	Organic solvents and halogenated hydrocarbons and their vapours
X67	Other gases and vapours
X68	Pesticides
X69	Other and unspecified chemicals and noxious substances
<i>X40-X49 Unintentional poisoning by and exposure to:</i>	
X40	Nonopioid analgesics, antipyretics and antirheumatics
X41	Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified
X42	Narcotics and psychodysleptics [hallucinogens], not elsewhere classified
X43	Other drugs acting on the autonomic nervous system
X44	Other and unspecified drugs, medicaments and biological substances
X45	Alcohol
X46	Organic solvents and halogenated hydrocarbons and their vapours
X47	Other gases and vapours
X48	Pesticides
X49	Other and unspecified chemicals and noxious substances
<i>Y10-Y19 Poisoning by and exposure to (undetermined intent):</i>	
Y10	Nonopioid analgesics, antipyretics and antirheumatics
Y11	Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified
Y12	Narcotics and psychodysleptics [hallucinogens], not elsewhere classified
Y13	Other drugs acting on the autonomic nervous system
Y14	Other and unspecified drugs, medicaments and biological substances
Y15	Alcohol
Y16	Organic solvents and halogenated hydrocarbons and their vapours
Y17	Other gases and vapours
Y18	Pesticides
Y19	Other and unspecified chemicals and noxious substances

- Limitations associated with the NZHIS data:
 - Only inpatients are captured, leaving those treated in emergency departments but not admitted unaccounted for.
 - Criteria for classification as an inpatient vary between hospitals.
 - Only generic classification of the substances involved is available, rather than the specific substance name.

- There is a time delay between presentation at hospital and availability of the data from NZHIS. This varies by area, but is generally less than one year.
- The ICD-10-AM coding system is complex and inflexible, the current version is the 10th since ICD coding was first used in 1901.

2.4. Public Health Unit (PHU) Data

- While a paper and email-based system piloted in 2001 was not universally successful, some PHUs currently operate their own local surveillance systems based on this approach.
- Any data, whether collected via a paper or electronic system can be incorporated into the comprehensive CISS.
- The quality, completeness and consistency of data collected varies between PHUs. Classification of intent can be problematic.

2.5. National Poisons Centre (NPC) Data

- The NPC operates a 24 hours a day, 365 days per year telephone service that fields enquiries regarding **actual** or **potential** toxic exposures.
- While there is no requirement to phone the NPC in the event of a poisoning, about 21,000 phone calls are received each year.
- Details of calls are recorded in an electronic database.
- NPC also operates an Internet database known as TOXINZ.
- There is no clinical or laboratory confirmation of actual exposures.

2.6. DriftNet (Spraydrift) Data

- A surveillance system (DriftNet) designed to monitor the incidence of spray drift events with potential, reported or alleged health effects.
- Sourced from PHU staff who collect information on spray drift complaints and incidents which are reported to them.
- Comparison with regional council data indicates that the DriftNet system is under utilised.

3. PROGRESS ON NATIONAL IMPLEMENTATION AND DEVELOPMENT OF A MEDIUM TERM STRATEGY, 2005/2006

National implementation of the comprehensive surveillance system was initiated in 2003/2004 following on from the successful pilot for the Auckland region. National data continues to be received on a quarterly basis from the New Zealand Health Information Service (NZHIS) for inpatient poisoning hospitalisations and from the Coronial Service Office (CSO) for fatal poisoning cases. CISS datasets for both date back to 2001. National DriftNet (spraydrift) data are incorporated for a second year, although the dataset dates back to 1998. Summarised national NPC data for the period July 2004 to December 2005 were made available via the MoH. CISS also contains more detailed NPC data for the period January 2003 to September 2004.

Local poisoning notifications from Auckland Regional Public Health Service (ARPHS) for Auckland City Hospital, and West Coast Public Health Unit (WCPHU) also continue to be received on a regular basis. Datasets for both date back to 2003.

The surveillance system now also includes local poisoning notification data from Southland Public Health Unit (SOPHU) for the years 2002 –2005 and Regional Public Health representing the following DHBs: Capital and Coast, Hutt and Wairarapa. The data representing Hutt and Wairarapa are available for the years 2004 and 2005, while Capital and Coast data are complete for 2005 only.

Thus this report is able to report on poisoning trends for six DHBs compared to only two in last years report (Auckland and West Coast). Historic PHU data for Southland, Capital and Coast, Hutt, and Wairarapa were reported in a bi-annual report released in January 2006⁷.

The contributing DHBs are well representative of the country, both on a geographic and population basis. Four of the six are based in the North Island, two of which represent large metropolitan centres. On a DHB population basis Auckland DHB is ranked fourth and Capital and Coast is ranked sixth. The other DHBs represent smaller provincial and rural areas. West Coast and Wairarapa have the smallest populations of all the DHBs and Southland is ranked 14/21. This cross-section of DHBs provides a useful sentinel surveillance system, which incorporated with the national datasets, provides useful analysis, which can contribute to the planning and implementation of policies and interventions.

However, the nature of the CISS is such that new datasets can be readily incorporated. In the future it is anticipated that additional notification data from PHUs will be integrated.

A new dataset to be integrated during the 2006/2007 financial year is notifications from medical practitioners. In December 2005, an amendment to the HSNO Act was made that now requires all diagnosing medical practitioners, in addition to hospitals, to report injuries caused by hazardous substances to the Medical Officer of Health. However the notification, by either hospitals or medical practitioners, of poisonings by substances not classified as hazardous substances is still not mandated. This would require changes to legislation outside of HSNO e.g. the Health Act. Discussions are

presently underway between the MoH and ESR regarding options for capturing the medical practitioner data and a draft case report form is being prepared.

As recognised for several years, the most desirable means of capturing any notification data is via integration with patient management systems. Dr John Fountain of the NPC has also long favoured this option and further discussions have been held with Dr Fountain during the past year. An additional enhancement of CISS would be to link in with the NPC's TOXINZ database.

The major complication with this approach is that no one common patient management system is used by all hospitals, and even within the same hospital a different system may be used for emergency department patients and inpatients. Furthermore, GPs use different systems again. Thus to have a nation wide integrated system would involve funding which is not presently available.

DriftNet data have again been included in this report but as in previous years, the numbers of reported events are low. Comparison with regional council data indicates that the DriftNet system (employed in PHUs) is under utilised. Therefore improved communication between PHUs and regional councils may enhance the referral of spraydrift incidents with health impacts to PHUs.

4. RESULTS FROM THE COMPREHENSIVE SURVEILLANCE SYSTEM FOR 2005.

4.1. Introduction

National results for 2005 by DHB, age, sex, ethnicity and substance from applicable data sources are presented, followed by results from each data source pertaining to Auckland, Hutt, Capital and Coast, Wairarapa, West Coast and Southland DHBs. A more detailed analysis of the combined datasets pertaining to poisoning in children aged less than five years, and poisonings involving paracetamol, alcohol and substances covered by the HSNO Act are then discussed. Finally, results from the CSO data pertaining to the years 2003/2004 are documented.

4.2. Summary of Key Statistics

4.2.1. 2005 National Analysis

- See Appendix 1: Tables 3, 4 and 11.
- 113 chemical injury deaths reported from the CSO for 2005 as of 31 December 2005. CSO data estimated to be 50-60% complete (varies by DHB) as there is a time lag associated with this data.
- 7358 poisoning hospitalisations (NZHIS) in 2005, a national rate of 196.9 per 100 000 population (7253 cases in 2003, 194.1 per 100 000 population, and 6958 cases in 2004, 186.2 per 100 000 population).
- 18 600 NPC calls categorised as human poisoning for 2005⁸.
- 5 spraydrift complaints in 2005 (10 in 2004).
- Whanganui DHB had the highest chemical injury CSO rate (11.0 per 100 000 population, 7 deaths) while West Coast and Lakes DHBs have had no chemical injury deaths reported to date^a.
- West Coast, Canterbury, and Otago DHB's had the highest NZHIS poisoning hospitalisation rates (287.5 per 100 000 population, 87 cases, 273.7 per 100 000 population, 1169 cases, and 255.9 per 100 000 population, 437 cases respectively), with the lowest from Capital and Coast DHB (80.1 per 100 000 population, 197 cases).

^a Caution required when interpreting CSO data by DHB as numbers are small and variable, and data completion rates vary by DHB.

- The majority of the CSO chemical injury deaths (79/113, 69.9%) and NZHIS poisoning hospitalisations (4314/7358, 58.6%) were deemed intentional.
- Highest age specific rates differed between the datasets: 45-64 years for the CSO (5.8 per 100 000 population, 48 deaths) and 15-24 years for NZHIS (351.1 per 100 000 population, 1773 cases). No deaths to date aged less than 15 years.
- 74.3% (84/113) of the CSO chemical injury deaths were male compared to 37.4% (2750/7358) of the NZHIS poisoning hospitalisations.
- For NZHIS data, the highest ethnicity-specific poisoning rate was for Maori (217.8 per 100 000 population, 1146 cases), followed closely by Europeans (200.2 per 100 000 population, 5225 cases). For chemical injury deaths, Europeans, Asians and Maori had similar rates (3.3 per 100 000 population, 85 deaths, 3.1 per 100 000 population, 7 deaths, and 2.7 per 100 000 population, 14 deaths respectively).
- Carbon monoxide was deemed the primary agent in 50.4% (57/113) of the chemical injury deaths for 2005 to date.

4.2.2. 2005 Auckland DHB Analysis

- See Appendix 1: Tables 3, 5 and 12.
- 7 chemical injury deaths reported from the CSO for 2005 as of 31 December 2005. CSO data estimated to be 50-60% complete (varies by DHB) as there is a time lag associated with this data.
- 740 poisoning hospitalisations (NZHIS) in 2005, 201.2 per 100 000 population (ranked 9/21 nationally).
- 1523 Auckland City Hospital poisoning notifications in 2005, 414.1 per 100 000 population.
- While the majority of the NZHIS and PHU poisonings were intentional (426/740, 57.6% and 799/1523, 52.5% respectively) a notable proportion of the deaths (4/7, 57.1%) and PHU hospitalisations (674/1523, 44.3%) were of indeterminate intent.

- Highest age-specific rates for NZHIS (339.8 per 100 000 population, 191 cases) and ARPHS (1062.2 per 100 000 population, 597 cases) were amongst 15-24 year olds, following the national trend.
- Auckland DHB NZHIS and CSO data followed the national trends by sex. However amongst the PHU poisoning notifications there were more males (842) than females (677).
- Maori had the highest ethnicity specific rate, followed by Europeans for both the local NZHIS (271.1 per 100 000 population, 79 cases, and 208.8 per 100 000 population, 431 cases respectively) and PHU poisoning data (538.8 per 100 000 population, 157 cases, and 455.3 per 100 000 population, 940 cases respectively).
- Three of the seven deaths (42.9%) involved ethanol, two of which were chronic exposure.
- Most common PHU substances were ethanol (952/2219, 42.9%) and paracetamol (116/2219, 5.2%).

4.2.3. 2005 Hutt DHB Analysis

- See Appendix 1: Tables 3, 6 and 13.
- 1 chemical injury death reported from the CSO for 2005 as of 31 December 2005. CSO data estimated to be 50-60% complete (varies by DHB) as there is a time lag associated with this data.
- 153 poisoning hospitalisations (NZHIS) in 2005, 116.0 per 100 000 population (ranked 19/21 nationally).
- 190 PHU poisoning notifications in 2005, 144.1 per 100 000 population. Dataset may not be complete for last three months of the year.
- Intent, age, sex and ethnicity trends similar between NZHIS and PHU.
- Majority intentional (91/153, 59.5% for NZHIS, 122/190, 64.2% for PHU).
- Distribution by age similar across all age bands with highest rate for those aged less than 5 years (225.0 per 100 000 population, 23 cases for NZHIS, 342.3 per 100 000 population, 35 cases for PHU).
- Females dominated (109/153, 71.2% for NZHIS, 130/190, 68.4% for PHU).

- European rate slightly higher than that for Maori for NZHIS (124.7 per 100 000 population, 115 cases and 117.5 per 100 000 population, 23 cases respectively. PHU rate for Europeans (152.9 per 100 000 population, 141 cases) also higher than that for Maori (107.2 per 100 000 population, 21 cases).
- Most common PHU substances (after unknown medication/s) were paracetamol (19/144, 13.2%) and ethanol (13/144, 9.0%).

4.2.4. 2005 Capital and Coast DHB Analysis

- See Appendix 1: Tables 3, 7 and 14.
- 5 chemical injury deaths reported from the CSO for 2005 as of 31 December 2005. CSO data estimated to be 50-60% complete (varies by DHB) as there is a time lag associated with this data.
- 197 poisoning hospitalisations (NZHIS) in 2005, 80.1 per 100 000 population (the lowest nationally).
- 408 PHU poisoning notifications in 2005, 165.9 per 100 000 population.
- Majority of poisoning hospitalisations intentional (105/197, 53.3% for NZHIS, 250/408, 61.3% for PHU) compared to 2/5 or 40.0% of the deaths (other three were of unknown intent).
- Highest NZHIS age specific rate for 0-4 year olds (121.7 per 100 000 population, 21 cases), and highest PHU age specific rate for 15-24 year olds (338.0 per 100 000 population, 123 cases). Four of the five deaths (80.0%) aged 45-64 years.
- Amongst the poisoning hospitalisations females dominated (137/197, 69.5% for NZHIS, 288/405, 71.1% for PHU) but only one death (20.0%) was female.
- European and Maori poisoning hospitalisation rates were similar (90.5 per 100 000 population, 156 cases and 94.8 per 100 000 population, 23 cases respectively for NZHIS, and 181.5 per 100 000 population, 313 cases and 177.3 per 100 000 population, 43 cases respectively for PHU). All deaths (5) were European.
- Most common PHU substances were paracetamol (74/494, 15.0%) and zopiclone (41/494, 8.3%). Alcohol only ranked 6th (14/494, 2.8%) but was the primary substance for two (40.0%) of the deaths.

4.2.5. 2005 Wairarapa DHB Analysis

- See Appendix 1: Tables 3, 8 and 15.
- 1 chemical injury death reported from the CSO for 2005 as of 31 December 2005. CSO data estimated to be 50-60% complete (varies by DHB) as there is a time lag associated with this data.
- 74 poisoning hospitalisations (NZHIS) in 2005, 193.7 per 100 000 population (ranked 12/21 nationally).
- 37 PHU poisoning notifications in 2005, 96.9 per 100 000 population. Dataset may not be complete for the last three months of the year.
- Majority intentional (48/74, 64.9% for NZHIS, 23/37, 62.2% for PHU).
- Highest age specific rate for NZHIS amongst 15-24 year olds (484.5 per 100 000 population, 20 cases), and highest age specific rate for PHU amongst 0-4 year olds (261.3 per 100 000 population, 7 cases).
- NZHIS poisoning data had the same number of females as males (37 each), PHU data had more females than males (21 vs. 16).
- Maori had a higher rate than Europeans for both datasets (333.1 per 100 000 population, 18 cases and 169.2 per 100 000 population, 52 cases respectively for NZHIS, and 129.6 per 100 000 population, 7 cases and 65.1 per 100 000 population, 20 cases respectively for PHU).
- Most common PHU substances were ethanol (9/76, 11.8%), paracetamol (7/76, 9.2%), and ibuprofen (7/76, 9.2%).

4.2.6. 2005 West Coast DHB Analysis

- See Appendix 1: Tables 3, 9 and 16.
- No chemical injury deaths reported from the CSO for 2005 as of 31 December 2005. CSO data estimated to be 50-60% complete (varies by DHB) as there is a time lag associated with this data.
- 87 poisoning hospitalisations (NZHIS) in 2005, 287.5 per 100 000 population (the highest nationally).
- 34 PHU poisoning notifications in 2005, 112.3 per 100 000 population.
- Intent, sex and ethnicity trends comparable between NZHIS and PHU data.

- About two thirds intentional (57/87, 65.5% for NZHIS, 23/34, 67.6% for PHU).
- More females than males (61/87, 70.1% for NZHIS, 23/34, 67.6% for PHU).
- Almost all poisonings were of European ethnicity where ethnicity was recorded (82/87, 94.3% NZHIS, 25/25, 100% for PHU).
- Highest NZHIS age specific poisoning rate for 25-44 year olds (505.2 per 100 000 population, 44 cases) and highest PHU age specific poisoning rate for 0-4 year olds (309.6 per 100 000 population, 6 cases).
- Most common PHU substances were paracetamol (7/42, 16.7%) and ethanol (5/42, 11.9%).

4.2.7. 2005 Southland DHB Analysis

- See Appendix 1: Tables 3, 10 and 17.
- 6 chemical injury deaths reported from the CSO for 2005 as of 31 December 2005. CSO data estimated to be 50-60% complete (varies by DHB) as there is a time lag associated with this data.
- 176 poisoning hospitalisations (NZHIS) in 2005, 170.3 per 100 000 population (ranked 14/21 nationally).
- 201 PHU poisoning notifications in 2005, 194.5 per 100 000 population.
- 138/201, 68.7% of the PHU poisoning notifications intentional and 5/6, 83.3% of the deaths, compared to 78/176, 44.3% of the NZHIS hospitalisations.
- NZHIS poisoning rates for 0-4 and 15-24 year olds similar (338.3 per 100 000 population, 24 cases and 346.4 per 100 000 population, 45 cases respectively) but PHU rate for 0-4 year olds notably higher than that for 15-24 year olds (549.7 per 100 000 population, 39 cases and 346.4 per 100 000 population, 45 cases respectively). Half the deaths (3/6) aged 25-44 years.
- More female than male hospitalisations (100/176, 56.8% for NZHIS, 124/201, 61.7% for PHU), more male than female deaths (4 vs. 2).
- NZHIS ethnicity specific poisoning rate for Maori (213.4 per 100 000 population, 23 cases) higher than that for Europeans (164.6 per 100 000 population, 144 cases). Ethnicity data not received by PHU.
- 4 deaths (66.7%) attributed primarily to carbon monoxide.

- Most common PHU substances were paracetamol (34/316, 10.8%) and codeine (17/316, 5.4%). Ethanol only ranked 14th (6/316, 1.9%).

4.2.8. 2005 Specific Analyses

4.2.8.1. Poisonings in Children aged less than 5 years

- See Appendix 1: Tables 18 and 19.
- No chemical injury deaths aged less than five years reported from the CSO for 2005 as of 31 December 2005. CSO data estimated to be 50-60% complete (varies by DHB) as there is a time lag associated with this data.
- 709 poisoning hospitalisations (NZHIS) aged less than five years, 261.8 per 100 000 population.
- For the PHUs, the percentage of total cases aged 0-4 years was higher than the 9.6% observed with the NZHIS data, ranging from 10.5% to 19.4%. This may reflect the underlying population structure, and or reporting systems.
- Of the 137 substances notified from the PHUs for poisonings aged less than five years, 35 (25.5%) involved paracetamol (excludes unknown substances). Rat poison featured in the top 10 substances (3/137, 2.2%).

4.2.8.2. Paracetamol Poisonings

- See Appendix 1: Table 20.
- No paracetamol related deaths reported from the CSO for 2005 as of 31 December 2005. CSO data estimated to be 50-60% complete (varies by DHB) as there is a time lag associated with this data.
- 257 PHU notifications involving paracetamol. It was either the most common or second most common substance for all the PHUs (excluding unknown medications).
- Across all the hospitals, 71.1% (182/256 cases where sex was known) of the paracetamol poisoning cases were female.

4.2.8.3. Ethanol Poisonings

- See Appendix 1: Table 21.

- 10 acute ethanol deaths (none intentional) reported from the CSO for 2005 as of 31 December 2005. CSO data estimated to be 50-60% complete (varies by DHB) as there is a time lag associated with this data.
- Annual average of 11 acute ethanol deaths for years 2001-2004.
- Ethanol was either the first or second most common substance reported from all hospitals except Invercargill (ranked 14th) and Wellington (ranked 6th).
- 64 (6.7%) of the Auckland City Hospital ethanol notifications were aged 14 to 17 years, a further 10 notifications in this age group reported from the other hospitals.

4.2.8.4. Poisonings Involving HSNO Substances

- See Appendix 1: Table 22.
- 187 notifications involving 78 substances covered by the HSNO Act.
- Most common substance was methylated spirits (24/187, 12.8%).

4.2.9. Coronial Service Office Data for 2003 and 2004

- See Appendix 1: Tables 23 to 27.
- Demographic and substance results were similar for 2003 and 2004.
- There were 231 chemical injury deaths in 2003 and 202 in 2004, corresponding annual rates 6.2 and 5.4 per 100 000 population respectively, as of 31 December 2005. CSO data estimated to be 80-90% complete.
- About two thirds of the chemical injury deaths were intentional (158/231, 68.4% in 2003 and 131/202, 64.9% in 2004).
- Canterbury DHB had the greatest number of chemical injury deaths for both years (33 each, an annual rate of 7.7 per 100 000 population) and the greatest number of intentional deaths (20 and 24). Northland DHB had the highest rate in 2003 (11.4 per 100 000 population, 16 deaths) and West Coast had the highest rate in 2004 (16.5 per 100 000 population, 5 deaths).
- Cases aged 25-44 years and 45-64 years had the highest rates in 2003 (9.1 per 100 000 population, 101 deaths and 8.1 per 100 000 population, 67 deaths respectively) and in 2004 (7.4 per 100 000 population, 82 deaths and 8.0 per 100 000 population, 66 deaths respectively).

- In 2003, there were 1.8 male chemical injury deaths for every female, and in 2004, there were 2.7 male deaths for every female death.
- The 2003/2004 chemical injury rates for European deaths were 6.7 (174 deaths) and 5.9 (155 deaths) per 100 000 population respectively and for Maori deaths were 6.1 (32 deaths) and 4.8 (25 deaths) per 100 000 population respectively. Maori had a much higher proportion of unintentional deaths (27/57, 47.4%) compared to Europeans (46/329, 14.0%).
- 2003/2004 combined results by deprivation index showed that rates increased rapidly between deprivations scores of three and eight, and remained steady for deprivation scores nine and ten.
- For both years, carbon monoxide was the most common substance, attributed to 64.9% (187/288) of the intentional deaths.
- For 2003/2004 combined, the leading substances involved in the unintentional deaths were methadone (16/78, 20.5%), hydrocarbons (15/78, 19.2%) and morphine or heroin (12/78, 15.4%).

4.3. Detailed National Analysis (2005)

The following section presents national chemical injury results for 2005 from the CSO, NZHIS, NPC and DriftNet data sources. While the NZHIS, NPC, and DriftNet datasets are complete for 2005, the CSO data are estimated to be between 50% and 60% complete. However, previous years results have shown that CSO demographic and substance trends may already be present. Relevant Appendix 1 tables are Table 3, 4 and 11.

As of 31 December 2005, there have been 113 chemical injury deaths filed at the CSO for 2005, an annual rate of 3.0 per 100 000 population. Data for the years 2001-2003 indicate that about 238 poisoning related deaths occur each year, an annual rate of 6.4 per 100 000 population.

There were 7358 NZHIS poisoning hospitalisations in 2005, a national rate of 196.9 per 100 000 population. In 2003, there were 7253 NZHIS poisoning hospitalisations (194.1 per 100 000 population), and 6958 (186.2 per 100 000 population) in 2004.

During 2005, the NPC received 28 365 phone calls⁸. Of these, 18 600 (65.6%) were categorized as human poisonings^b. In 2003, the only other year for which a complete dataset is available in CISS, there were 18 784 human poisoning phone calls received by the NPC. Further analysis of the human poisoning calls in 2005 is not possible as the NPC data were provided in a summarised form relating to all phone calls.

Five spraydrift complaints were reported via DriftNet in 2005, compared to ten in 2004. The DriftNet data are discussed separately in Section 4.3.1.

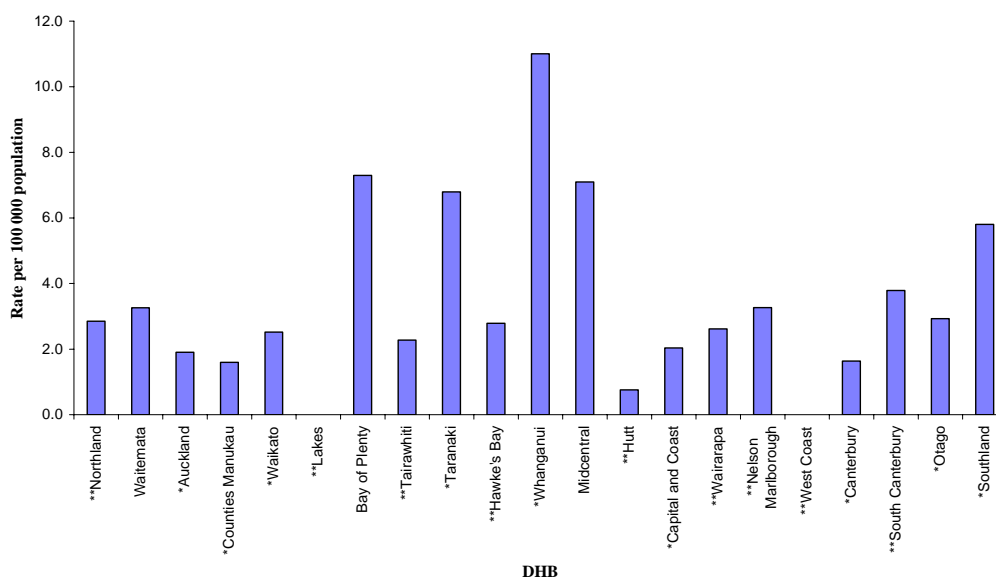
In 2005, as in 2003 and 2004, the majority of the chemical injury deaths and NZHIS poisoning hospitalisations were intentional (79/113, 69.9% and 4314/7358, 58.6% respectively).

When examining the 2005 chemical injury CSO data to date by DHB, Whanganui had the highest rate (11.0 per 100 000 population, 7 deaths) (Figure 1). This is the same rate as that observed for Whanganui in 2003, which ranked second nationally. However in 2004, the rate for Whanganui (4.7 per 100 000 population, 3 deaths) was less than the national average. This illustrates the variation in rates that results from dealing with small numbers.

The greatest number of chemical injury deaths to date for 2005 has occurred in Waitemata (14 deaths, 3.3 per 100 000 population), Bay of Plenty (13 deaths, 7.3 per 100 000 population), and MidCentral (11 deaths, 7.1 per 100 000 population) DHBs. To date for 2005, no chemical injury deaths have occurred in Lakes and West Coast DHB. West Coast had the highest national rate in 2002 (19.8 per 100 000 population, 6 deaths) and 2004 (16.5 per 100 000 population, 5 deaths), which again illustrates the issue surrounding small numbers. Note that the timing of deaths filed at the CSO varies by coroners, which will influence counts by DHB for an incomplete year.

^b The NPC classifies calls as human poisoning, animal poisoning, spill/fire or general information.

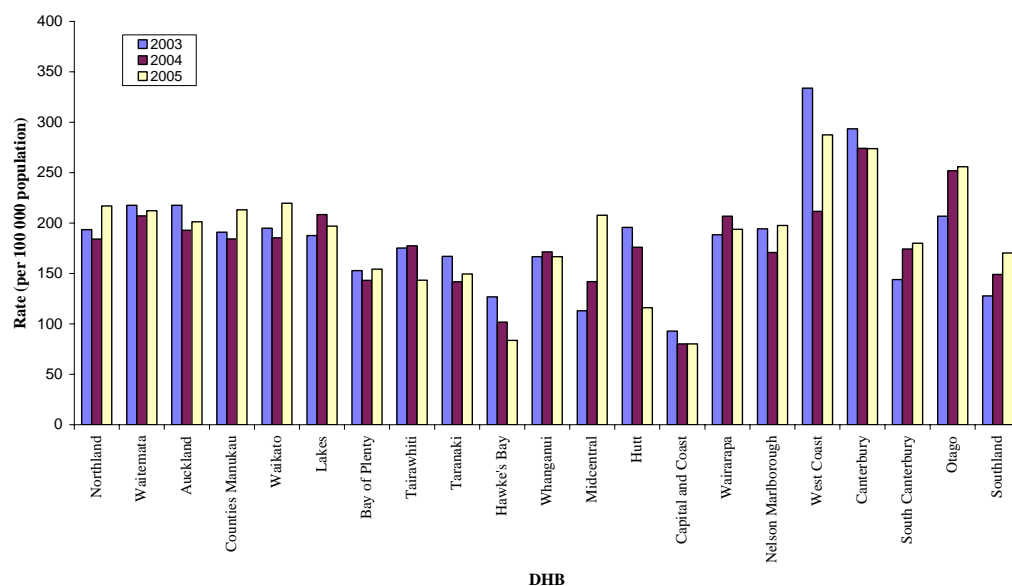
Figure 1: Chemical injury death rates by DHB, 2005 (as of December 2005).



* Numbers of deaths are less than ten, ** numbers of deaths are less than five.

Analysis of the 2005 NZHIS data by DHB shows that West Coast had the highest rate of poisoning hospitalisations (287.5 per 100 000 population, 87 cases) (Figure 2). This DHB also had the highest rate in 2003 and was ranked third in 2004. Two other South Island DHBs made up the top three in 2005; Canterbury (273.7 per 100 000 population, 1169 cases) and Otago (255.9 per 100 000 population, 437 cases). West Coast and Canterbury DHBs also had the highest rates for intentional poisonings (188.3 per 100 000 population, 57 cases, and 177.2 per 100 000 population, 757 cases respectively) while Otago and Canterbury DHBs had the highest rates for unintentional poisonings (86.1 per 100 000 population, 147 cases, and 85.2 per 100 000 population, 364 cases respectively). In 2005 as in 2003 and 2004, Capital and Coast DHB has the lowest overall rate (80.1 per 100 000 population, 197 cases).

Figure 2: NZHIS poisoning rates by DHB, 2003-2005.

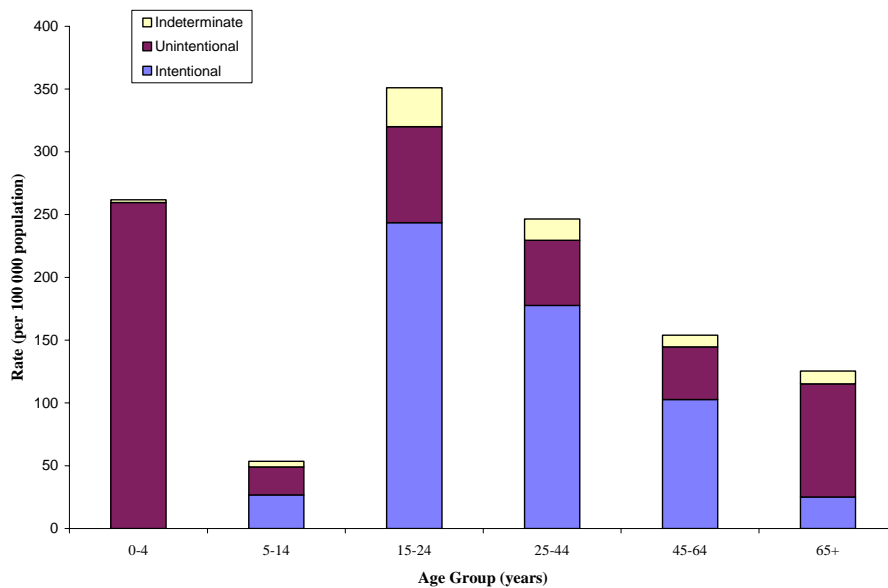


The highest age specific rate for NZHIS poisonings occurred in the 15-24 year age group (351.1 per 100 000 population, 1773 cases) (Figure 3). This age group also had the highest rate for intentional poisonings (243.5 per 100 000 population, 1230 cases). The 45-64 year age group had the highest age specific rate for the chemical injury deaths to date (5.8 per 100 000 population, 48 deaths).

There were no chemical injury deaths aged less than 15 years filed at the CSO as of 31 December 2005. However, the rate of NZHIS poisonings for the 0-4 year age group was 261.8 per 100 000 population, 709 cases. None of these were deemed intentional. The NZHIS rate for poisonings aged 5-14 years was the lowest at 53.4 per 100 000 population (308 cases).

Over two thirds of the NZHIS poisoning hospitalisations aged 15-24 years (1230/1773, 69.4%), 25-44 years (1970/2733, 72.1%), and 45-64 years (847/1270, 66.7%) were deemed intentional. By comparison, only 20.0% (113/565) of NZHIS hospitalisations aged over 65 years were deemed intentional (Figure 3).

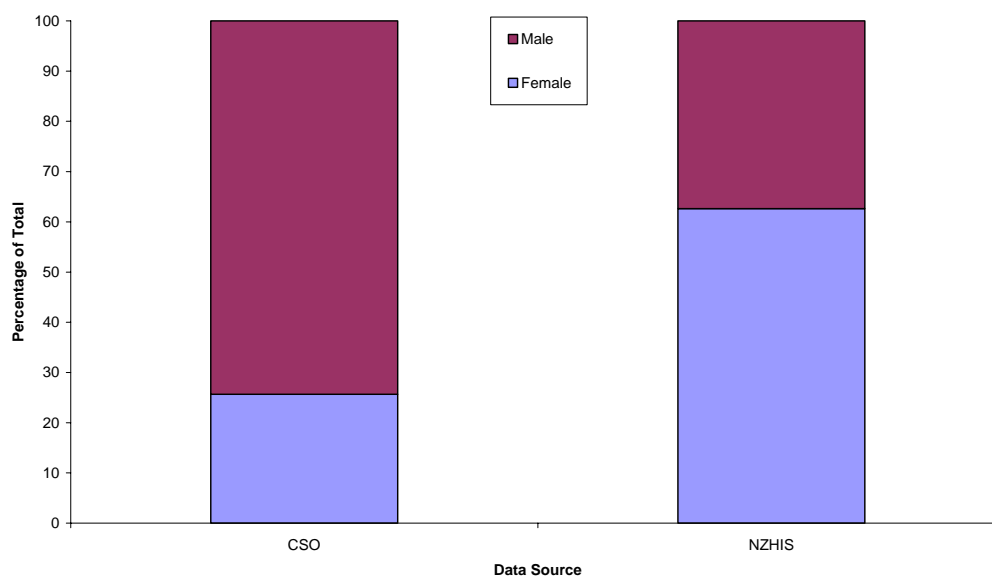
Figure 3: NZHIS poisoning rates by age and intent, 2005.



Differences by sex were apparent between fatal poisoning cases and hospitalisations (Figure 4). Of the CSO deaths, 74.3% (84/113) were male compared to 37.4% (2750/7358) of the NZHIS hospitalisations. This trend was also observed in 2003 and 2004.

The split between intentional and unintentional poisoning hospitalisations was similar for males (1244 versus 1298), but 66.6% (3070/4608) of the female hospitalisation were deemed intentional. Females had a higher proportion of unintentional deaths than males; 20.7% (6/29) compared to 9.5% (8/84).

Figure 4: Percentage of poisonings by sex for national CSO and NZHIS data, 2005.

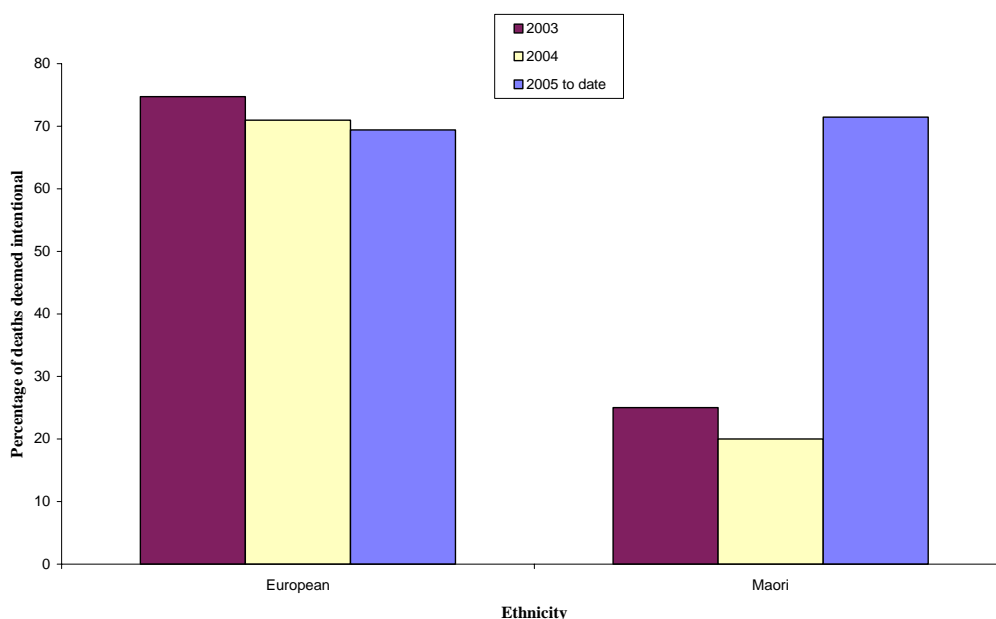


For the 2005 NZHIS poisoning data, the highest ethnicity specific rate was for Maori (217.8 per 100 000 population, 1146 cases), followed closely by that for Europeans (200.2 per 100 000 population, 5225 cases). In 2003 and 2004, Europeans and Maori also had similar rates to each other. In 2005, unintentional poisoning hospitalisation rates were higher for Pacific Peoples (90.9 per 100 000 population, 182 cases) and Maori (86.5 per 100 000 population, 455 cases) than Europeans (63.0 per 100 000 population, 1645 cases). Intentional poisoning hospitalisation rates in 2005 for Europeans (123.9 per 100 000 population, 3234 cases) and Maori (112.1 per 100 000 population, 590 cases) were similar.

For chemical injury deaths, Europeans, Asians and Maori had similar rates (3.3 per 100 000 population, 85 deaths, 3.1 per 100 000 population, 7 deaths, and 2.7 per 100 000 population, 14 deaths respectively). To date, no chemical injury deaths have been reported for persons classed as Pacific Peoples.

Of the 14 Maori chemical injury deaths in 2005 to date, 10 were deemed intentional (71.4%). In 2003 and 2004, only 22.8% (8/32 and 5/25) of the Maori chemical injury deaths were deemed intentional. Further analysis will be possible when this data nears completion in 2007, whereby any reporting biases associated with timeliness will be reduced. The percentage of intentional European deaths from chemical injury has not differed greatly over the years (Figure 5).

Figure 5: Percentage of European and Maori chemical injury deaths deemed intentional, 2003-2005.



Note: 2005 data is estimated to be only 50-60% complete compared to the 2003/2004 data, which is estimated to be 90% complete.

Carbon monoxide was the primary agent in 50.4% (57/113) of the chemical injury deaths, all of which were intentional. Carbon monoxide also dominated in 2003 and 2004. In 2005, the only other substances associated with greater than five deaths were ethanol (10/113, 8.8%) and methadone (7/113, 6.2%).

In 2005, as in 2003 and 2004, “antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified” accounted for the greatest proportion of the ICD 10 codes assigned to the intentional NZHIS poisonings (2760/6905, 40.0%). The most common classification in 2005 (as in 2003 and 2004) for unintentional poisonings was ‘other and unspecified drugs, medicaments and biological substances’ (724/2939, 24.6%). Note each hospitalisation can have up to ten ICD 10 codes assigned. Refer to Table 1 for description of codes.

4.3.1. Spraydrift analysis

During 2005, five spraydrift complaints were recorded. This is the second lowest number reported via the surveillance system during its seven years and three months of operation (system implemented in September 1998) (Table 2).

Table 2: Number of Spraydrift Complaints Reported by Year

Number of Complaints	Year							
	1998*	1999	2000	2001	2002	2003	2004	2005
	14	16	13	28	9	4	10	5

* last 3 months of 1998

Three of the five *Driftnet* incidents in 2005 were reported on the North Island.

The first was reported in February by a Wairarapa farmer adjacent to another farm. The complainant cited exposure to Glyphosate (brand name Roundup®), Metsulphuron (brand name Escort®), Sulfonyl and others. Health complaints were of tiredness, central nervous system effects, eye problems, psychological harm and other effects. These were not substantiated by a medical practitioner, and it was the conclusion of the local Medical Officer of Health that these symptoms had not been caused by pesticide exposure. Damage to trees was also cited by the complainant but these were likewise unsubstantiated.

The other two incidents in the North Island occurred in the Bay of Plenty. In August, an individual buying fresh produce at a roadside stall was inadvertently sprayed with Thiocloprid (brand name Calypso®) while it was applied nearby. In November a commercial property was exposed to lime fertilizer spray from neighbouring properties. Physical health symptoms were confirmed by health professionals in both cases: non specified symptoms were associated with the Thiocloprid exposure, and “burning eyes” was confirmed by an ophthalmologist following the lime fertiliser spray exposure.

Two *Driftnet* incidents were reported in the South Island during late 2005. A gardener in Canterbury was concerned about the response of local plants to what she assumed were hormonal weed killer sprays in October. The exposure could not be confirmed and a possible source was never identified. The other incident occurred in November, when a member of the public was exposed to an unknown spray while cycling past an orchard in Nelson/Marlborough. The complainant experienced a headache following the exposure but it was unclear whether this was related to the spray. There were no signs to warn passers-by of the spray event in the latter case.

Complainants were unaware of prior notice of agrichemical spray application in all five cases. Methods of application, spray equipment used and wind speed/direction were not discussed in the results received through the *Driftnet* surveillance system in 2005.

The incidents were detected by the following means: tree damage and onset of symptoms (suspected cocktail of sprays), visual observation and facial burning (lime fertiliser), plants wilting and dying (suspected hormonal sprays), visual observation (thiocloprid), and visual observation as well as mist and odour sensed on skin and in eyes (pesticide not determined).

In all five cases reported, the complainant was interviewed by a Public Health Officer. Action was taken to contact the sprayer by the Regional Council in both Bay of Plenty cases, and by the Public Health Officer in the Nelson/Marlborough case.

2005 reporting via DriftNet has further highlighted several issues with the surveillance system and these are discussed further in Section 6 of this report.

4.4. Detailed Auckland DHB Analysis (2005)

The following section compares 2005 Auckland DHB chemical injury data from the CSO, NZHIS, and Auckland Regional Public Health Services (ARPHS). Relevant Appendix 1 tables are Table 5 and 12.

ARPHS receives poisoning notifications from Auckland City Hospital only, thus representing just Auckland DHB (one of the three DHBs in the greater Auckland area). However, these data are incomplete for children as the majority of these cases are seen at Starship Hospital and notification data from this hospital are not routinely received by ARPHS.

In 2005, 1523 poisoning notifications (414.1 per 100 000 population.) were received by ARPHS, an increase from that notified in 2003 (1344, 365.5 per 100 000 population) and 2004 (1324, 360.0 per 100 000 population). Possibly changes to data collection and reporting processes cannot be excluded as a contributing cause to the increase for 2005.

Unlike the NZHIS data, which only contains inpatient data, the ARPHS data also includes cases seen at Auckland City Hospital emergency department. Hence a greater number of poisonings are received by ARPHS than by NZHIS. The 2005 NZHIS dataset for Auckland DHB contains 740 poisoning cases, a rate of 201.2 per 100 000 population. This is just above the national NZHIS poisoning hospitalisation rate (196.9 per 100 000 population), and the ninth highest by DHB nationally. There were 800 NZHIS poisoning cases for Auckland DHB in 2003 (217.5 per 100 000 population), and 709 in 2004 (192.8 per 100 000 population).

There have been seven chemical injury deaths filed at the CSO as of 31 December 2005 for Auckland DHB in 2005. There were 10 chemical injury deaths filed at the CSO at the equivalent time last year. To date for 2003 and 2004, there have been 26 and 28 chemical injury deaths respectively filed at the CSO for Auckland DHB.

Only one of the seven chemical injury deaths (14.3%) was deemed intentional compared to 57.6% (426/740) of the NZHIS poisoning hospitalisations and 52.5% (799/1523) of the PHU poisoning notifications. Four of the chemical injury deaths (57.1%) were of indeterminate intent. A large proportion of the PHU poisoning notifications (674/1523, 44.3%) were also classed as indeterminate intent – intent is determined by PHU staff and is based on exposure as opposed to outcome, with cases involving alcohol predominately classed as indeterminate.

As with the national data, the highest Auckland DHB age specific rate for NZHIS poisonings was amongst 15-24 year olds (339.8 per 100 000 population, 191 cases). This age group also had the highest age specific rate for the ARPHS data; at 1062.2 per 100 000 population (597 cases) it was over twice the next highest rate of 492.7 per 100 000 population (624 cases) amongst those aged 25-44 years. For both datasets, actual case numbers were highest overall in the 25-44 years age bracket (265 for NZHIS and 624 for ARPHS). These trends are similar to those observed in 2003 and 2004 for NZHIS and ARPHS.

While the ARPHS data do not include the majority of child notifications, the 2005 Auckland DHB NZHIS poisoning rate for those aged less than five years (230.0 per 100 000 population, 58 cases) was less than the national rate (261.8 per 100 000 population). There were also 58 NZHIS cases in this age group in 2003, and 43 cases in 2004.

Four of the seven chemical injury deaths (57.1%) to date for 2005 for Auckland DHB were aged 25-44 years, the remaining three (42.9%) were aged 45-64 years.

When analysed by sex, the Auckland NZHIS and CSO data followed the national trends with the majority of the poisoning hospitalisations being female (441/740, 59.6%) but the majority of the chemical injury deaths being male (6/7, 85.7%). In 2003 and 2004, there was an even distribution by sex for the ARPHS poisoning data. In 2005, there were more males than females (842 versus 677).

Four of the chemical injury deaths were European, two were Maori and one was of Asian ethnicity. Maori had the highest ethnicity specific rate, followed by Europeans for both the local NZHIS (271.1 per 100 000 population, 79 cases, and 208.8 per 100 000 population, 431 cases respectively) and PHU poisoning data (538.8 per 100 000 population, 157 cases, and 455.3 per 100 000 population, 940 cases respectively). This trend was also observed in 2003 for both datasets and with the NZHIS data in 2004.

The primary substance in five of the seven chemical injury deaths (71.4%) for Auckland DHB in 2005 were classed as chemicals/drugs of abuse, with two deaths from chronic ethanol poisoning and another from acute ethanol poisoning.

The majority of the substances involved in the ARPHS notifications were classed as chemicals/drugs of abuse (1288/2218, 58.1%), while 35.0% (777/2218) were therapeutic substances. This represents a higher percentage of chemicals/drugs of abuse than that observed in 2003 and 2004, influenced by an increase in notifications involving ethanol for 2005.

Ethanol was by far the single most common substance involved with the notifications in 2005 (952/2219, 42.9%). Ethanol was the most common substance in 2003 and 2004, but with fewer presentations (746 and 794 respectively). In 2005, it was also the most common substance involved in the intentional (328/1452, 22.6%) and indeterminate intent notifications (620/699, 88.7%) and second equal associated with the unintentional notifications (4/68, 5.9%). Cyanide was the most common substance involved in the unintentional notifications (5/68, 7.4%) in 2005. Paracetamol was the second most common substance, both overall (116/2219, 5.2%) and amongst the intentional notifications (110/1452, 7.6%). While 64.7% (615/950) of the ethanol notifications were for males, 67.8% (78/115) of the paracetamol notifications were for females (where sex was known).

In 2005, as in 2003 and 2004 the most common ICD 10 classification for intentional NZHIS poisonings for Auckland DHB was 'antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified' (241/708, 34.0%). The most common classification for the 2005 unintentional poisonings was 'other and unspecified chemicals and noxious substances' (82/335, 24.5%). In 2003 and 2004 the

most common unintentional classification was 'other and unspecified drugs, medicaments and biological substances'.

4.5. Detailed Hutt DHB Analysis (2005)

The following section compares 2005 Hutt DHB chemical injury data from the CSO, NZHIS, and Regional Public Health. Relevant Appendix 1 tables are Table 6 and 13.

There has only been one chemical injury death reported for 2005 as of 31 December 2005 from the CSO. For the years 2001-2004, there was an average of 10 deaths a year for Hutt DHB. As the number of deaths is so few, no further details will be presented here.

There were 153 NZHIS poisoning hospitalisations for Hutt in 2005, a rate of 116.0 per 100 000 population which ranks 19/21 nationally. Only Hawkes Bay, and Capital and Coast DHBs have lower rates (Table 3).

Regional Public Health received 190 poisoning notifications from Hutt Hospital for 2005, although the data for the latter few months may be incomplete as there are notably fewer cases reported towards the end of the year. The corresponding rate was 144.1 per 100 000 population.

Intent, sex, age, and ethnicity trends between the Hutt DHB NZHIS and PHU poisoning data are similar. The majority were intentional (91/153, 59.5% for NZHIS, and 122/190, 64.2% for PHU), and females dominated (109/153, 71.2% for NZHIS, and 130/190, 68.4% for PHU). However, while females dominated across all intents with the NZHIS data, there was a similar count by sex of PHU unintentional poisonings.

Unlike the national NZHIS poisoning data, the highest age specific rate for Hutt NZHIS data was amongst children aged less than five years, although the rate (225.0 per 100 000 population, 23 cases) was below the national rate (261.8 per 100 000 population). The PHU poisoning rate for this age group was also the highest at 342.3 per 100 000 population, 35 cases. For both the NZHIS and PHU datasets the highest intentional poisoning rate was amongst those aged 15-24 years (115.7 per 100 000 population, 20 cases for NZHIS and 196.6 per 100 000 population, 34 cases for PHU).

The NZHIS poisoning rate for Europeans (124.7 per 100 000 population, 115 cases) was slightly higher than that for Maori (117.5 per 100 000 population, 23 cases). The PHU rate for Europeans (152.9 per 100 000 population, 141 cases) was also higher than that for Maori (107.2 per 100 000 population, 21 cases).

Maori had a rate of 56.2 per 100 000 population (11 cases) for the intentional and unintentional NZHIS poisoning hospitalisations, and intentional PHU poisoning notifications, while the rate for unintentional PHU poisoning notifications was very similar (51.1 per 100 000 population, 10 cases). By comparison, the NZHIS intentional poisoning rate for Europeans (78.1 per 100 000 population, 72 cases) was over twice that for unintentional poisonings (34.7 per 100 000 population, 32 cases). The PHU intentional poisoning rate for Europeans (100.9 per 100 000 population, 93

cases) was also over twice the unintentional poisoning rate (45.6 per 100 000 population, 42 cases).

Therapeutic substances were the most common substance class associated with the Hutt PHU notifications (82/144, 56.9%). Excluding unknown medications, paracetamol (19/144, 13.2%) and ethanol (13/144, 9.0%) were the most common substances. Ten of the 19 paracetamol notifications (52.6%) involved children aged less than five years.

In 2005, as in 2003 and 2004 the most common ICD 10 classification for intentional NZHIS poisonings for Hutt was 'antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified' (65/134, 48.5%). The most common classification for unintentional poisonings was 'other and unspecified drugs, medicaments and biological substances' (18/58, 31.0%) and 'other and unspecified chemicals and noxious substances' (18/58, 31.0%). This latter category is over twice the percentage observed in 2003 and 2004.

4.6. Detailed Capital and Coast Analysis (2005)

The following section compares 2005 Capital and Coast DHB chemical injury data from the CSO, NZHIS, and Regional Public Health. Relevant Appendix 1 tables are Table 7 and 14.

There have been five chemical injury deaths reported for 2005 as of 31 December 2005 for Capital and Coast DHB. Over the years 2001-2004, the number of deaths has ranged from 10 to 17 per annum.

There have been 197 NZHIS poisoning notifications for Capital and Coast in 2005, a rate of 80.1 per 100 000 population. This was the lowest nationally, as in 2003 and 2004.

Regional Public Health received 408 poisoning notifications from Wellington and Kenepuru hospitals, a rate of 165.9 per 100 000 population.

As with many of the other datasets, most of the NZHIS and PHU poisoning hospitalisations were deemed intentional (105/197, 53.3% for NZHIS, 250/408, 61.3% for PHU), although the percentages were not as high as seen with some other DHBs. Two of the five chemical injury deaths (40.0%) were deemed intentional, the other three (60.0%) were of unknown intent.

The highest age specific rate for NZHIS poisoning data was amongst 0-4 year olds. However at 121.7 per 100 000 population (21 cases), this is under half that observed for this age group at the national level. The next highest rate was for 15-24 year olds (109.9 per 100 000 population, 40 cases). This age group had the highest age specific rate for the PHU poisoning data (338.0 per 100 000 population, 123 cases), followed by that for those aged less than five years (249.2 per 100 000 population, 43 cases). For both datasets, the 15-24 year olds had the highest rate for intentional poisonings (82.4 per 100 000 population, 30 cases for NZHIS and 208.9 per 100 000 population,

76 cases for PHU). Four of the five chemical injury deaths (80.0%) were aged 45-64 years.

For both poisoning hospitalisation datasets, females dominated (137/197, 69.5% for NZHIS and 288/405, 71.1% for PHU). However while females dominated both the intentional and unintentional PHU notifications, unintentional NZHIS hospitalisations were evenly distributed by sex. Only one of the five chemical injury deaths (20.0%) was female.

European and Maori poisoning hospitalisation rates were similar (90.5 per 100 000 population, 156 cases and 94.8 per 100 000 population, 23 cases respectively for NZHIS and 181.5 per 100 000 population, 313 cases and 177.3 per 100 000 population, 43 cases respectively for PHU). For NZHIS intentional poisonings, the rate for Europeans (50.5 per 100 000 population, 87 cases) was similar to that for Maori (49.5 per 100 000 population, 12 cases). For PHU data, the respective intentional poisoning rates for Europeans and Maori were 116.6 per 100 000 population, 201 cases, and 86.6 per 100 000 population, 21 cases. The NZHIS unintentional poisoning rate for Maori was 24.7 per 100 000 population, 6 cases compared to the European rate of 31.9 per 100 000 population, 55 cases and the PHU unintentional poisoning rate for Maori was 74.2 per 100 000 population, 18 cases compared to the European rate of 53.9 per 100 000 population, 93 cases. All five of the chemical injury deaths thus far were Europeans.

Therapeutic substances dominated the PHU notifications (372/494, 75.3%) with paracetamol the most common substance (74/494, 15.0%), followed by zopiclone (41/494, 8.3%). Ethanol was ranked 6th (14/494, 2.8%).

'Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified' were the most common ICD 10 classification for intentional NZHIS poisonings (72/158, 45.6%) in 2005, as in the previous two years. However, while 'other and unspecified chemicals and noxious substances' was the most common classifications for unintentional poisonings in 2005 (33/80, 41.3%), 'other and unspecified drugs, medicaments and biological substances' was the most common in 2003 and 2004.

Two of the five deaths (40.0%) involved ethanol as the primary substance, one acute poisoning the other chronic exposure.

4.7. Detailed Wairarapa Analysis (2005)

The following section compares 2005 Wairarapa DHB chemical injury data from the CSO, NZHIS, and Regional Public Health. Relevant Appendix 1 tables are Table 8 and 15.

Wairarapa DHB has had only one chemical injury death reported in 2005 as of 31 December 2005. For the years 2001-2004 combined, seven deaths were reported with none in 2002. As the number of deaths is so few, no further details will be presented here.

There were 74 NZHIS poisoning hospitalisations in 2005 for Wairarapa, a rate of 193.7 per 100 000 population which ranks 12/21 nationally.

There were only 37 poisoning notifications received by Regional Public Health from Masterton Hospital (96.9 per 100 000 population) indicating that not all hospital attendances are being notified. In addition there were no cases reported for the last three months of the year (average of four a month for the rest of the year). So interpretation of the data is limited by the data incompleteness.

The majority of the NZHIS poisoning hospitalisations and PHU poisoning notifications were intentional (48/74, 64.9% and 23/37, 62.2% respectively). As seen with the national NZHIS data, the highest age specific rate for the Wairarapa NZHIS poisoning data was amongst those aged 15-24 years (484.5 per 100 000 population, 20 cases). This rate was 1.8 times higher than the next highest rate (273.2 per 100 000 population, 27 cases for 25-44 year olds) and also higher than the national rate for this age group. This age group (15-24 years) ranked second amongst the PHU poisoning notifications behind that for 0-4 year olds (261.3 per 100 000 population, 7 cases). For both datasets, the highest intentional poisoning rate was for persons aged 15-24 years (339.1 per 100 000 population, 14 cases for NZHIS, and 193.8 per 100 000 population, 8 cases for PHU).

There were the same numbers of male and female NZHIS poisoning hospitalisations for Wairarapa (37). However, amongst the unintentional poisoning hospitalisations there was three times as many males as females and amongst the intentional poisoning hospitalisations there was 1.5 females to every male. There were slightly more female than male PHU poisoning notifications (21 versus 16), the difference accounted for by the higher number of intentional notifications for females (15/23, 65.2%).

Maori had a higher poisoning rate than Europeans for both datasets (333.1 per 100 000 population, 18 cases and 169.2 per 100 000 population, 52 cases respectively for NZHIS and 129.6 per 100 000 population, 7 cases and 65.1 per 100 000 population, 20 cases respectively for PHU).

For both poisoning datasets, the highest intentional rate was for Maori (259.1 per 100 000 population, 14 cases for NZHIS, and 74.0 per 100 000 population, 4 cases for PHU). Numbers associated with the unintentional NZHIS hospitalisations and PHU notifications by ethnicity are small.

Therapeutic substances clearly dominated the substances associated with the PHU notifications (55/76, 72.4%), with paracetamol and ibuprofen each featuring seven times (9.2% each). Ethanol was the only substance reported more frequently (9/76, 11.8%).

In 2005, as in 2003 and 2004 the most common ICD 10 classification for intentional NZHIS poisonings for Wairarapa was 'antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified' (33/72, 45.8%). As in 2004, although not in 2003, the most common classification for unintentional poisonings was 'other and unspecified drugs, medicaments and biological substances' (8/23, 34.8%).

4.8. Detailed West Coast DHB Analysis (2005)

The following section presents 2005 chemical injury data for West Coast DHB from CSO, NZHIS and West Coast PHU. Relevant Appendix 1 tables are Table 9 and 16.

There have been no chemical injury deaths for 2005 reported from the CSO as of 31 December 2005 compared to 4 in 2001, 6 in 2002, 1 in 2003 and 5 in 2004.

There were 87 NZHIS poisoning hospitalisations from West Coast DHB in 2005, a rate of 287.5 per 100 000 population and the highest nationally. In 2003 and 2004, there were 101 (333.7 per 100 000 population) and 64 (211.5 per 100 000 population) NZHIS poisoning hospitalisations respectively.

The WCPHU only received 34 notifications (112.3 per 100 000 population) from Grey Hospital relating to chemical injury in 2005, indicating that not all hospital attendances are being notified to the PHU. The same finding was observed in 2003 (47 notifications) and 2004 (35).

Intent, sex and ethnicity trends were comparable between the NZHIS and PHU poisoning data. For both data sets, about two thirds of the cases were intentional (57/87, 65.5% for NZHIS, and 23/34, 67.6% for PHU) and females dominated (61/87, 70.1% for NZHIS and 23/34, 67.6% for PHU). For both NZHIS and PHU intentional poisonings, there were more females than males, while for unintentional poisonings there were a similar number of males to females. Where ethnicity was known, all of the PHU poisoning notifications and 94.3% (82/87) of the NZHIS poisoning hospitalisations were European.

Trends by age did differ between the NZHIS and PHU poisoning datasets. The highest NZHIS age specific rate was for 25-44 year olds (505.2 per 100 000 population, 44 cases) and the highest PHU age specific rate was for 0-4 year olds (309.6 per 100 000 population, 6 cases). For intentional poisonings, the highest NZHIS age specific rate was for 25-44 year olds (459.3 per 100 000 population, 40 cases) and the highest PHU age specific rate was for 15-24 year olds (161.3 per 100 000 population, 5 cases).

Over three quarters (33/42, 78.6%) of the substances associated with the PHU notifications were ascribed to therapeutic substances, with paracetamol the single most common substance, both overall (7/42, 16.7%) and for the intentional hospitalisations (6/31, 19.4%). Ethanol (5/42, 11.9%) was the second most common substance followed by zopiclone (4/42, 9.5%). These three substances were also the top three in 2004.

In 2005, the most common ICD 10 classification for intentional NZHIS poisonings for West Coast was 'antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified' (38/106, 35.8%). The most common classification for unintentional poisonings was 'other and unspecified drugs, medicaments and biological substances' (7/23, 30.4%). These findings comply with those observed in 2003 and 2004.

4.9. Detailed Southland DHB Analysis (2005)

The following section presents 2005 chemical injury data for Southland DHB from the CSO, NZHIS and Southland PHU. Relevant Appendix 1 tables are Table 10 and 17.

For 2005, as of 31 December 2005 there have been six chemical injury deaths reported for Southland DHB. On average, six deaths have been reported per annum for the years 2001-2004.

There were 176 NZHIS poisoning hospitalisations from Southland DHB in 2005, a rate of 170.3 per 100 000 population which ranks 14/21 nationally.

In 2005, 201 poisoning notifications from Invercargill Hospital were received by Southland PHU, compared to 188 in 2003 (181.9 per 100 000 population), and 185 in 2004 (179.0 per 100 000 population). The 2005 rate was 194.5 per 100 000 population.

While over two thirds (138/201, 68.7%) of the PHU poisoning notifications were intentional, only 44.3% (78/176) of the NZHIS poisoning hospitalisations were intentional. Five of the six chemical injury deaths (83.3%) were intentional, the other was unintentional.

The NZHIS age specific rates for 0-4 year olds and 15-24 year olds were similar (338.3 per 100 000 population, 24 cases, and 346.4 per 100 000 population, 45 cases respectively). However, the PHU rate for 0-4 year olds (549.7 per 100 000 population, 39 cases) was higher than the rate for 15-24 year olds (346.4 per 100 000 population, 45 cases). For both NZHIS and PHU data, the 15-24 year olds had the highest rate for intentional hospitalisations (161.7 per 100 000 population, 21 cases, and 307.9 per 100 000 population, 40 cases respectively). Two deaths were aged 15-24 years, three 25-44 and one was over 65 years.

There were more female than male poisoning hospitalisations (100/176, 56.8% for NZHIS, and 124/201, 61.7% for PHU) while the number of male chemical injury deaths (4) was greater than that for females (2).

For the NZHIS poisonings, the rate for Maori (213.4 per 100 000 population, 23 cases) was higher than that for Europeans (164.6 per 100 000 population, 144 cases). The unintentional rate for Maori (102.1 per 100 000 population, 11 cases) was also higher than that for Europeans (67.4 per 100 000 population, 59 cases). Furthermore, the intentional rate for Maori (92.8 per 100 000 population, 10 cases) was higher than that for Europeans (74.3 per 100 000 population, 65 cases). Ethnicity data is not collected by the PHU. Two of the chemical injury deaths were European, two Maori, and one each of Asian and unknown ethnicity.

Amongst the PHU notifications, paracetamol was the most common substance (34/316, 10.8%), followed by codeine (17/316, 5.4%). Ethanol was ranked 14th (6/316, 1.9%).

As with the national data and the DHB data presented in this section, the most common ICD 10 classification for Southland intentional NZHIS poisonings was 'antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified' (50/139, 36.0%). The most common classification for unintentional poisonings was 'other and unspecified drugs, medicaments and biological substances' (23/95, 24.2%). This is similar to findings observed in 2003 and 2004.

Four of the deaths (66.7%) were attributed primarily to carbon monoxide.

4.10. Specific Analyses

Inclusion of several data sets in a comprehensive surveillance system enables comparison of data relating to specific public health issues and the resulting picture is more representative of the associated burden of disease than would have been obtained when examining one data set alone. This has been illustrated in the following examples: poisoning in children aged less than five years; poisonings involving paracetamol or ethanol; and substances covered by the HSNO Act.

4.10.1. Poisonings in Children Aged Less Than 5 Years

Details on cases aged less than five years are presented in Appendix 1 Tables 18 and 19. CSO and ARPHS data are excluded from this analysis; CSO because there have been no cases for this age group reported as of 31 December 2005 and ARPHS because notifications from Starship are not received.

In 2005, there were 709 NZHIS poisoning hospitalisations involving children less than five years of age (9.6% of total NZHIS poisoning hospitalisations), an increase from the 614 or 8.8% in 2004. The corresponding rate for 2005 was 261.8 per 100 000 population. As expected, none of the NZHIS hospitalisations in this age group were intentional. There were 391 male hospitalisations compared with 318 female hospitalisations. Ethnicity specific rates (per 100 000 population) were 287.0 for Europeans (433 cases), 256.0 for Maori (173 cases) and 218.1 for Pacific Peoples (53 cases).

The number of PHU notifications involving children aged less than five years exceeded the number of NZHIS hospitalisations for all reporting PHUs. For example, there were 21 NZHIS hospitalisations of this age group for Capital and Coast compared to 43 PHU notifications. Thus for the PHUs, the percentage of total cases aged 0-5 years was higher than the 9.6% observed with the NZHIS data, ranging from 10.5% to 19.4%. Sex and ethnicity trends were similar for the NZHIS and PHU datasets.

Of the 137 known substances notified from the PHUs for children aged less than five, 35 (25.5%) involved paracetamol. Other prominent substances included unknown medications (8/137, 5.8%), dishwashing powder or detergent (6/137, 4.4%) and cough/flu medication (5/137, 3.6%). Rat poison featured in the top 10 substances (3/137, 2.2%).

4.10.2. Paracetamol Poisonings

2005 summary demographic data on paracetamol poisonings are presented in Appendix 1 Table 20. As of 31 December 2005 there have been no deaths in 2005 primarily attributed to paracetamol filed at the CSO. For the PHU data, paracetamol was either the most common or second most common of the identifiable substances for all the PHUs.

In total, there were 257 notifications involving paracetamol, of which 116^c were reported from Auckland City Hospital (5.2% of total substances for that hospital), down from 139 notifications in 2004. The Wellington hospitals reported 74 hospitalisations involving paracetamol, 15.0% of their total substances reported. For the other hospitals, the number of notifications involving paracetamol ranged from 7 to 34 and the percentage contribution ranged from 9.2% to 16.3% of total substances.

The majority of the paracetamol notifications for all hospitals with the exception of Hutt Hospital were deemed intentional. Over half (10/19) of the paracetamol notifications from Hutt Hospital were in children aged under five years and 17 of the 74 (23.0%) paracetamol notifications from the Wellington hospitals were also of this age group. Across all the hospitals, 71.1% (182/256) of the paracetamol notifications were female (where sex was known). The majority of the notifications involved persons of European ethnicity although of the Auckland City Hospital notifications, 20.5% (23/112) involved Asians (where ethnicity was known).

4.10.3. Ethanol Poisonings

For 2005 as of 31 December 2005 there have been 10 deaths from acute ethanol poisoning filed at the CSO (8.8% of total chemical injury deaths) (Appendix 1 Table 21). Over the years 2001-2004, there has been an average of 11 deaths a year from acute ethanol poisoning. None of the ethanol related deaths in 2005 were deemed intentional, they were aged between 37 and 58 years, all 10 were male and nine were of European ethnicity. The deaths were from nine different DHBs. There were also five deaths from chronic ethanol poisoning filed at the CSO for 2005 as of 31 December 2005.

In 2005, there were 952 ethanol notifications (42.9% of total substances) from Auckland City Hospital, an increase on the 791 reported in 2004. The number of notifications for the remaining five DHB ranged from 5 to 14, totaling 47. While ethanol was either the first or second most common substance reported from Auckland City Hospital, Grey Hospital, Hutt Hospital and Masterton Hospital, it was less dominant amongst the substances for Invercargill Hospital (ranked 14th overall) and the Wellington hospitals (ranked 6th). This could reflect reporting procedures rather than actual incidence of ethanol related poisonings for these two latter hospitals.

Sixty-four (6.7%) of the Auckland City Hospital notifications involving ethanol were aged between 14 and 17 years, and there were a further 10 notifications (21.3%) in this age group from the other hospitals.

^c As the Auckland City Hospital notification data does not include children, this number is under-representative of the true count as paracetamol is a likely substance involved with child poisonings.

Nearly two thirds (615/950, 64.7%) of the Auckland City Hospital notifications were male (where sex was known).

4.10.4. Poisoning Involving HSNO Substances

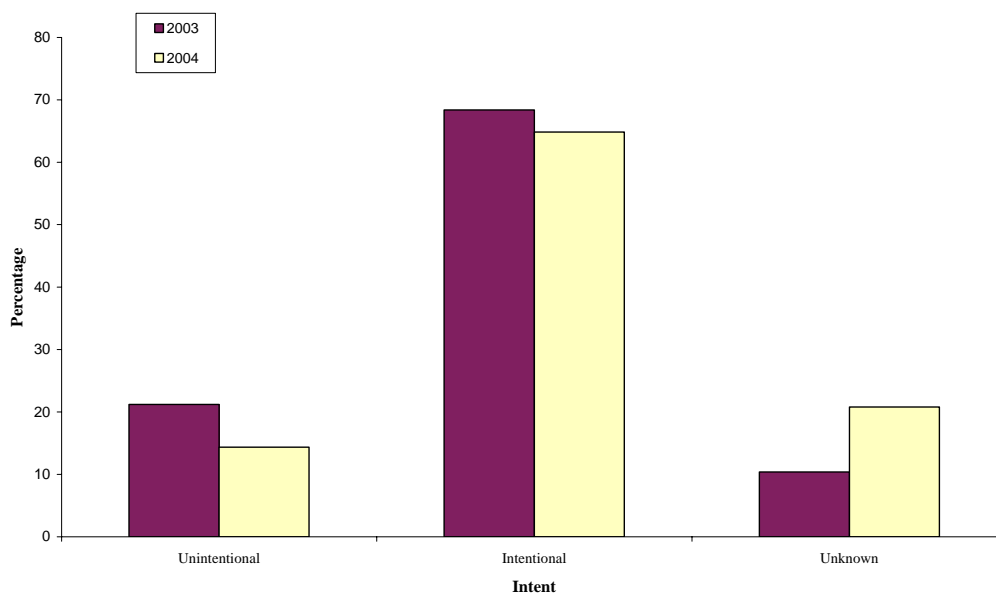
Combined 2005 PHU data for Auckland, Hutt, Capital and Coast, Wairarapa, West Coast and Southland identified 187 notifications involving 78 substances covered by the HSNO Act (Appendix 1 Table 22). The most common was methylated spirits (24/187, 12.8%), followed by unspecified fumes (12/187, 6.4%). In addition, there were several more reports involving specified fumes. There were 10 reports (5.3%) involving bleach and a further eight (4.3%) involving household cleaners and five (2.7%) involving detergents. Eight notifications (4.3%) involved petrol and five (2.7%) involved cyanide.

5. CORONIAL SERVICE OFFICE DATA FOR 2003 AND 2004

The number of deaths attributable to chemical injuries in New Zealand for 2003 and 2004 as of 31 December 2005 was 231 and 202 respectively. The corresponding annual rate for 2003 was 6.2 per 100 000 population and for 2004, 5.4 per 100 000 population. By comparison, there have been 240 chemical injury deaths filed for the year 2001 (6.4 per 100 000 population) and 244 deaths filed for the year 2002 (6.5 per 100 000 population). Thus it is estimated that the 2003/2004 data are 90% complete.

The breakdown of the 2003/2004 chemical injury deaths by intent is similar for both years, with the majority of deaths being intentional (158/231, 68.4% in 2003, and 131/202, 64.9% in 2004) (Figure 6).

Figure 6: Chemical injury deaths by intent, 2003 and 2004.



Figures 7 & 8 and Appendix 1 Table 23 present chemical injury death data by DHB. For both years the greatest number of deaths occurred in Canterbury DHB (33 in each year, annual rate of 7.7 per 100 000 population), followed by Auckland (26 in 2003, 7.1 per 100 000 population and 28 in 2004, 7.6 per 100 000 population). The highest rate in 2003 was from Northland DHB (11.4 per 100 000 population, 16 deaths), followed by Whanganui (11.0 per 100 000 population, 7 deaths). In 2004 the highest rate occurred in West Coast DHB (16.5 per 100 000 population, 5 deaths), followed by Wairarapa (10.5 per 100 000 population, 4 deaths) and Otago (10.0 per 100 000 population, 17 deaths). By comparison, there was only one death for West Coast DHB in 2003, and Otago DHB has eight fewer deaths in 2003 than 2004, illustrating how variable this data can be due to small numbers.

For both years Canterbury DHB had the greatest number of intentional chemical injury deaths (20 in 2003 and 24 in 2004). In 2003 Canterbury DHB also had the

greatest number of unintentional deaths (10), representing 30.3% of chemical injury deaths for that DHB. In 2004 this number halved.

Figure 7: Number of chemical injury deaths by DHB, 2003 and 2004.

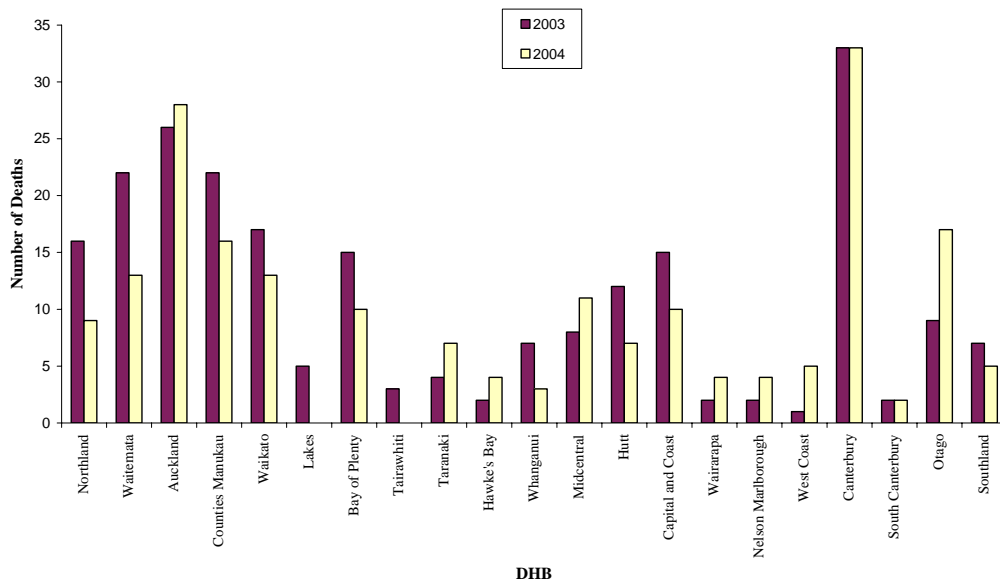
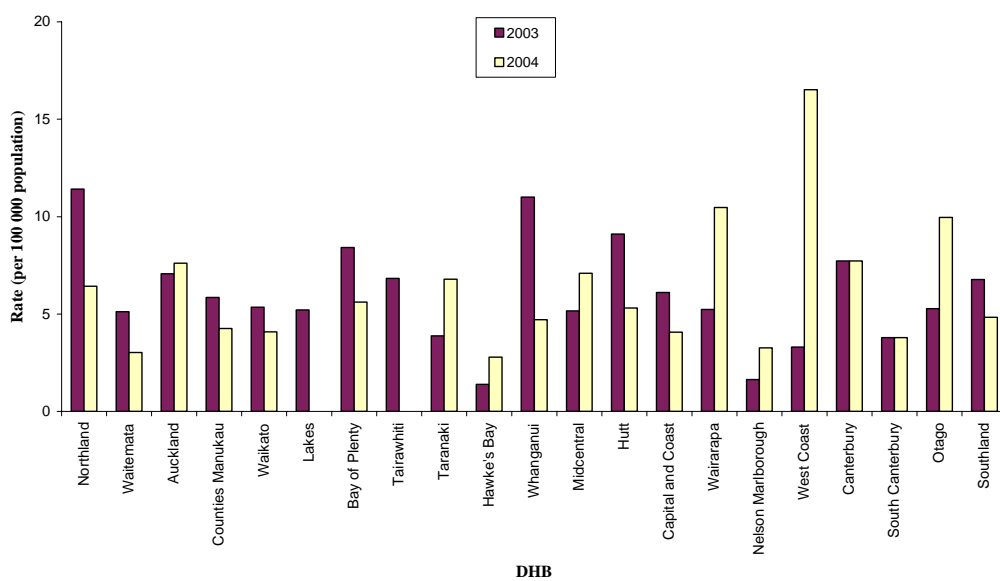


Figure 8: Chemical injury death rates by DHB, 2003 and 2004.



In 2003, the highest age specific rate occurred in the 25-44 year age group (9.1 per 100 000 population, 101 deaths), followed by the 45-64 year age group (8.1 per 100 000 population, 67 deaths). In 2004, these two age groups also had the highest rates although in reverse order with the 45-64 year age group having a rate of 8.0 per 100 000 population (66 deaths) and the 25-44 year age group having a rate of 7.4 per 100 000 population (82 deaths) (Figure 9 and Appendix 1 Table 24).

There were no chemical injury deaths aged less than five years and three chemical injury deaths aged 5-14 years in 2003/2004. These latter deaths included two accidental deaths from butane inhalation and one intentional carbon monoxide poisoning.

The number of intentional chemical injury deaths was highest for 25-44 year olds (69 in 2003 and 50 in 2004), however the proportion of intentional deaths versus unintentional/unknown intent deaths for each age group increases with increasing age (Figures 10 & 11). For example, in 2003 40.0% (14/35) of the deaths for the 15-24 year age group were intentional compared to 84.0% (21/25) of the deaths in the 65 plus years age group.

Figure 9: Chemical injury death rates by age group, 2003 and 2004.

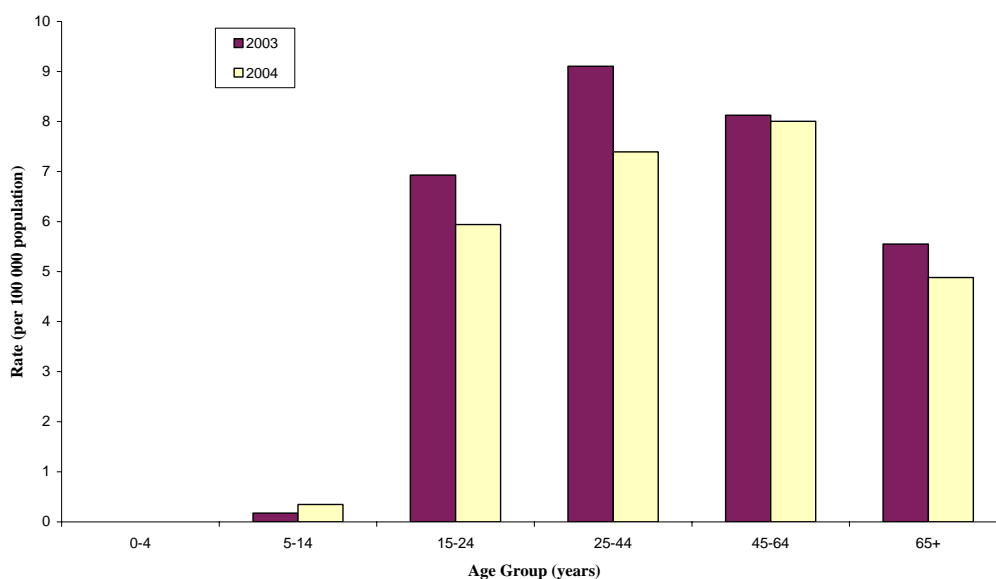


Figure 10: Chemical injury deaths by age group and intent, 2003.

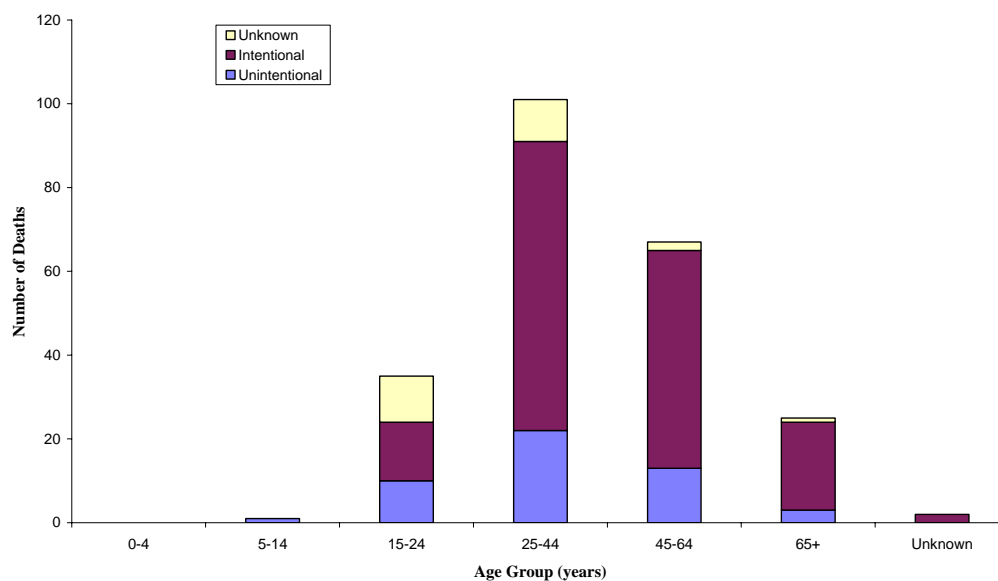
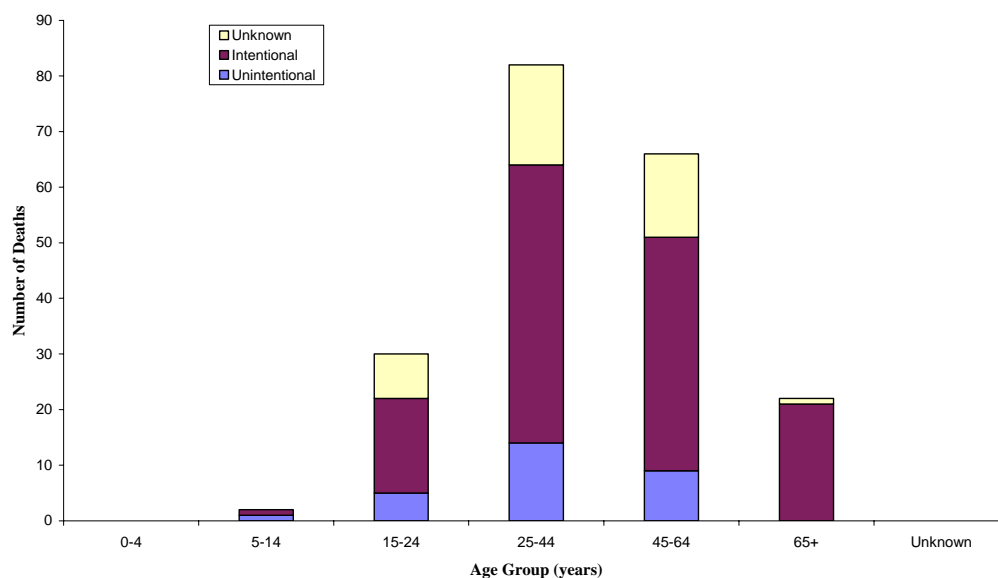


Figure 11: Chemical injury deaths by age group and intent, 2004.

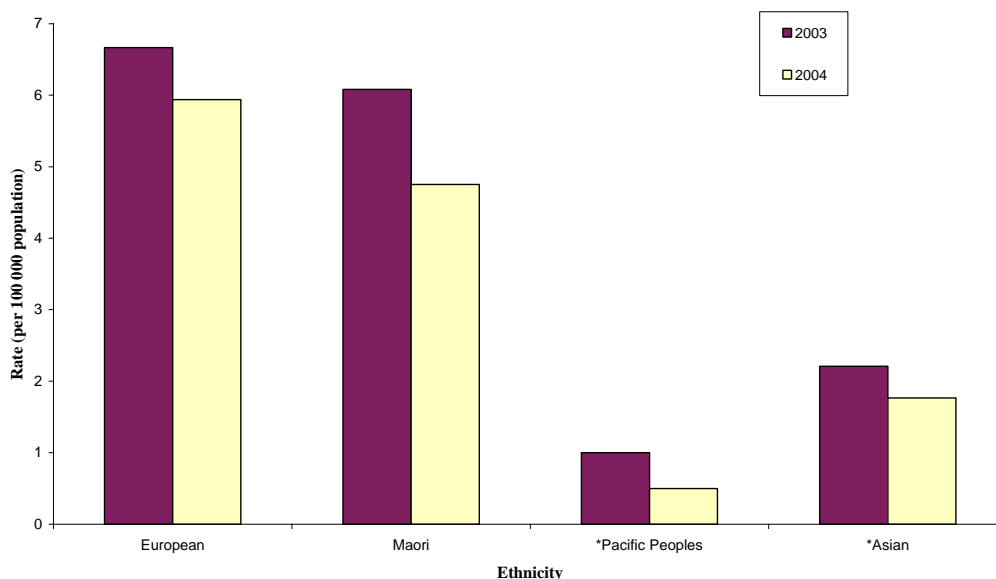


The number of male chemical injury deaths exceeded the female deaths for both years. In 2003, there were 1.8 male deaths, for every female and in 2004, there were 2.7 male deaths for every female death (Appendix 1 Table 24).

For both years, chemical injury deaths were evenly distributed by ethnicity. Where ethnicity was known (401/433, 92.6%), an average of 82.0% (329/401) were of European ethnicity, and 14.2% (57/401) were of Maori ethnicity (Appendix 1 Table 24, Figure 12). The 2003/2004 rates for European deaths were 6.7 per 100 000 population (174 deaths) and 5.9 per 100 000 population (155 deaths) respectively and

for Maori were 6.1 per 100 000 population (32 deaths) and 4.8 per 100 000 population (25 deaths) respectively. Maori had a much higher proportion of unintentional deaths (27/57, 47.4%) compared to Europeans (46/329, 14.0%). For both years combined, there were only three deaths of Pacific Peoples ethnicity and nine of Asian ethnicity.

Figure 12: Chemical injury death rates by ethnicity, 2003 and 2004.

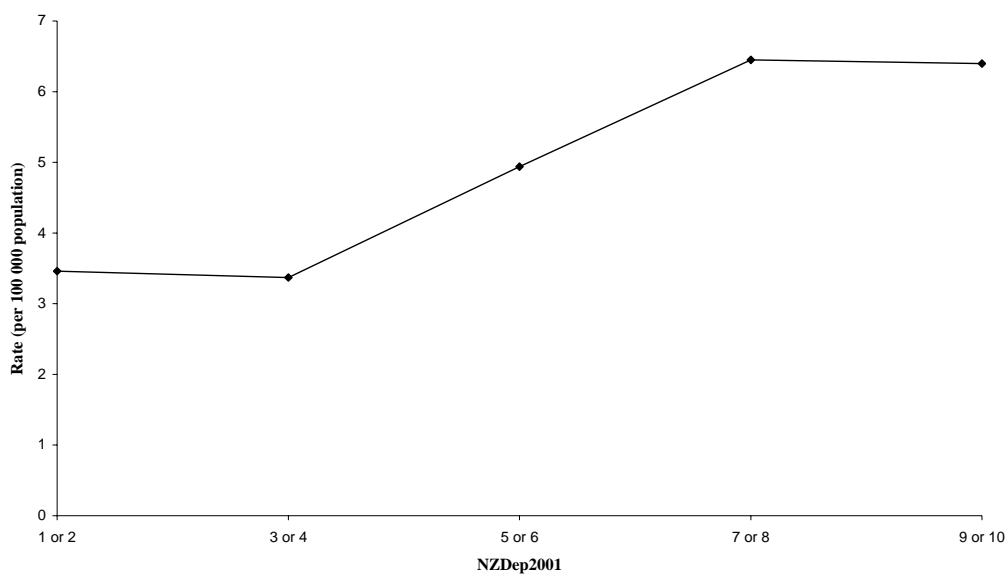


* Numbers of deaths for each year are less than or equal to five.

The following graph (Figure 13) illustrates the association between rates of chemical injury deaths and deprivation in New Zealand. The measure of deprivation is based on the NZDep2001 decile scale, with 1 representing the least deprived and 10 representing the most deprived score⁹. Analysis is based on the address where the chemical exposure occurred as opposed to the home address of the case, although for the majority of cases they are the same. Cases are included only where the address was geocoded to at least an accuracy of “Street” (366/433, 84.5%).

Combined results for 2003 and 2004 show that rates increased notably between deprivations scores of three and eight, and remained steady for deprivation scores nine and ten.

Figure 13: Chemical injury death rates (2003/2004 combined) by NZDep2001.



Substance data were similar for 2003 and 2004. For both years, 54.3% (235/433) of the deaths involved more than one substance.

Combined results for both years show that just under half (197/426, 46.2%) of the known substances primarily attributed to the deaths (primary substances) were classed as “Household/Domestic Chemicals”. The next most prominent substance class was “Therapeutics” (133/426, 31.2%) followed by “Chemicals/Drugs of Abuse” (87/426, 20.4%) (Appendix 1 Table 25).

The main contributor to the “Household/Domestic Chemicals” class was carbon monoxide. Carbon monoxide was the primary substance involved in 44.7% of the total deaths where the substances were known (193/432). In particular, it was attributed to 64.9% (187/288) of the intentional deaths (Figures 14 & 15). The other leading primary substances for all deaths (both years combined) were morphine or heroin (31/432, 7.2%), methadone (28/432, 6.5%), hydrocarbons (petrol, butane, LPG etc) (26/432, 6.0%) and ethanol (19/432, 4.4%) (Appendix 1 Table 26). The leading substances involved in the unintentional deaths were methadone (16/78, 20.5%), hydrocarbons (15/78, 19.2%) and morphine or heroin (12/78, 15.4%).

Figure 14: Top 5 primary substances involved in chemical injury deaths by intent, 2003.

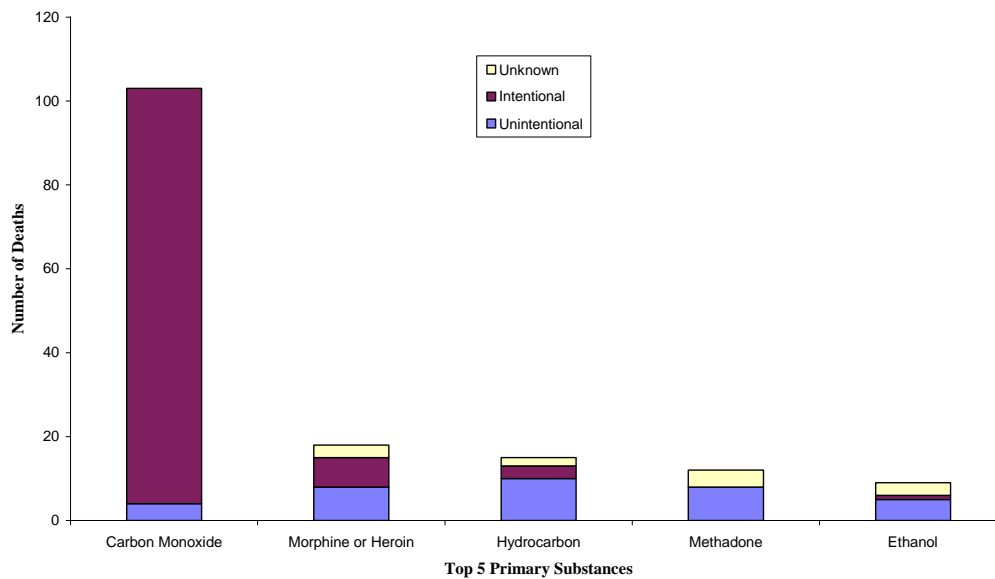
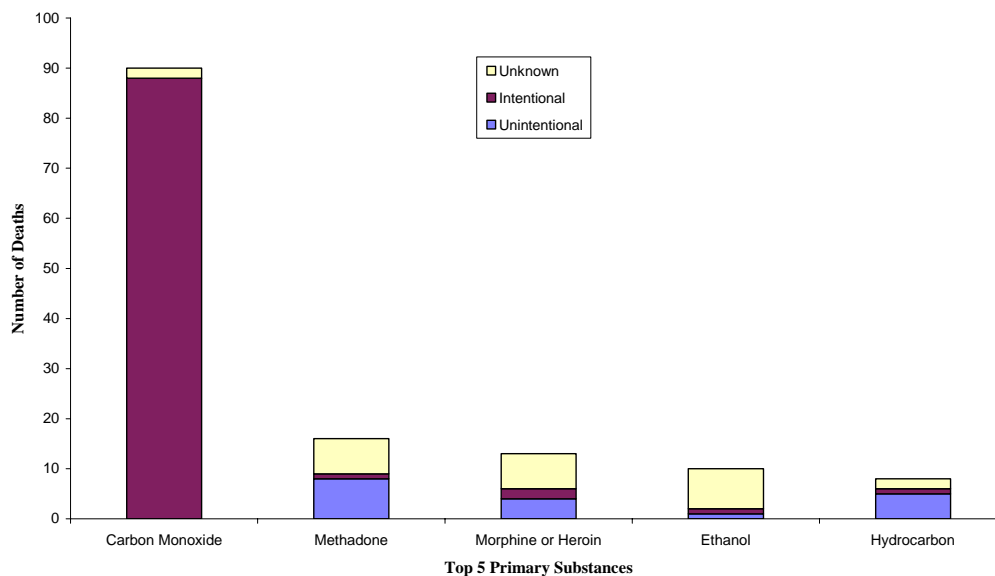


Figure 15: Top 5 primary substances involved in chemical injury deaths by intent, 2004.



Primary substances associated with the deaths for these two years which are specifically regulated by the HSNO Act included hydrocarbons (26), cyanide (3), glyphosate (3), paraquat (2) and one each of ethylene glycol, methanol and caustic soda (Appendix 1 Table 27).

6. CONCLUSIONS AND RECOMMENDATIONS

This report has presented comprehensive chemical injury surveillance data for the year 2005. The data comprise of national mortality data (sourced from the CSO), national inpatient hospitalisation data (sourced from NZHIS), national spraydrift data (sourced from the DriftNet surveillance system) and local emergency department and inpatient hospitalisation data for the hospitals attached to the Auckland, Hutt, Capital and Coast, Wairarapa, West Coast, and Southland DHBs. A summary of key statistics for 2005 are detailed in Section 4.2.

Such a comprehensive assemblage of poisoning data were first presented for 2003 and national trends across datasets for that year and comparison of New Zealand's mortality figures with international results for 2001/2002 were included in the 2003 annual report⁴ and the latter also published in the New Zealand Medical Journal¹⁰ in 2005. Updated comparisons are not included in this report but it is recommended that a re-evaluation of trends should be undertaken when there are sufficient long-term data. Next years report should contain at least two years worth of local PHU notification data for all six DHBs (while notification data for Auckland and West Coast DHBs have been included in the last three reports, this is the first time an annual report has included notification data from Hutt, Capital and Coast, Wairarapa and Southland DHBs).

As mentioned in Section 3 of this report (Progress on National Implementation and Development of a Medium Term Strategy, 2005/2006), local notification data provided by other PHUs/hospitals would be readily and appreciatively encompassed into CISS. While it has been recognised that the most desirable means of capturing any notification data is via integration with patient management systems, resources are currently unavailable to enable this.

A means of capturing notifications of hazardous substance injuries from medical practitioners should be finalised and implemented during the 2006/2007 financial year and any available data can be incorporated into next year's annual report.

As in 2004, this report has not included a detailed analysis of poisoning calls received by the NPC. The Ministry of Health did provide the CISS with summarised NPC data, but a more detailed analysis of calls relating specifically to human poisonings (as opposed to general information calls and calls relating to animal poisonings and spills) was not possible.

DriftNet data have again been included in this report. The number of complaints reported by PHUs for 2005 was only five and the number of complaints reported through DriftNet since its implementation in 1998 averages twelve per year for the whole country. It is apparent that the amount of data currently being collected using Driftnet is an under representation of the overall number of events. While we know that the total number of complaints generated by the public is much larger than that, only incidents with health impacts fall under the scope of DriftNet. According to a 2001 report by Mazzoni¹¹ there are significant numbers of incidents *with health effects* being reported to councils and *not passed on* to PHUs:

“...two regional councils forwarded their datasets containing their spray drift incidents over the last two years. Preliminary analysis of both datasets indicate that indeed the reported incidents are much higher than what is being captured on *Driftnet* (over 200 cases total). In both datasets, a number of the spray drift incidents report human exposures and health complaints. The regional council data however lack the amount of detail and follow up that *Driftnet* would provide. A comprehensive health impact analysis from these regional council datasets is therefore not possible. This clearly indicates the need for the two agencies (PHSs and Regional Councils) to coordinate their efforts in the health sector. Incidentally one of the datasets containing over sixty complaints, some of which indicate human health concerns came from a regional council whose PHS had reported no health spray drift complaints in *Driftnet* for either year.”

It has been suggested previously¹² that the low number of reported complaints on DriftNet may be due to: 1) unfamiliarity with the software and/or software incompatibility and 2) complaints being directed to the NPC or regional councils rather than PHUs. The regional councils aspect has been discussed above, and it appears the bulk of complaints are being directed there rather than the PHUs or the NPC (the NPC only received 29 spraydrift calls in 2002). In addition, as ESR is currently accepting the DriftNet data in any form from PHUs and no longer requiring the use of the DriftNet software program per se, the software itself is not a likely reason for the low number of complaints. Therefore future discussion between PHUs and regional councils may improve the referral of spraydrift incidents with health impacts to PHUs.

The small number of cases involved with some of the datasets presented in this report, particularly the CSO data, requires caution when interpreting figures, especially rates. A further limitation of the data presented in this report is the incomplete nature of the CSO data for 2005. As the timing of reports filed as the CSO can vary by coroner, comparisons across DHBs must be done with care. Caution is also advised when interpreting results by intent. While intent is most reliable for the deaths (determined by coroner), intent associated with the PHU notifications is less robust. For the West Coast and Southland notification data presented in this report, which did not have intent specifically assigned, cases reported as overdoses have been classed as intentional, with any others, e.g. those reported as ingestion or inhalation, have been classed as unintentional. A further limitation associated with the PHU data is that it appears that some hospitals are not notifying all presentations (i.e. both emergency departments attendances and inpatient hospitalisations).

APPENDIX 1

Table 3: 2005 National Chemical Injury Data from CSO, NZHIS, PHU and DriftNet by DHB

DHB	CSO (deaths to date) ¹		NZHIS (admitted patients)		PHU Notifications		DriftNet Complaints No.
	No.	Rate ²	No.	Rate ²	No.	Rate ²	
Northland	4	2.9	304	216.9			0
Waitemata	14	3.3	912	212.2			0
Auckland	7	1.9	740	201.2	1523	414.1	
Counties Manukau	6	1.6	800	213.0			
Waikato	8	2.5	698	219.7			0
Lakes	0	0.0	189	196.9			0
Bay of Plenty	13	7.3	275	154.4			2
Tairāwhiti	1	2.3	63	143.4			0
Taranaki	7	6.8	154	149.5			0
Hawke's Bay	4	2.8	120	83.6			0
Whanganui	7	11.0	106	166.6			0
MidCentral	11	7.1	322	207.8			0
Hutt	1	0.8	153	116.0	190	144.1	0
Capital and Coast	5	2.0	197	80.1	408	165.9	0
Wairarapa	1	2.6	74	193.7	37	96.9	1
Nelson Marlborough	4	3.3	242	197.6			1
West Coast	0	0.0	87	287.5	34	112.3	0
Canterbury	7	1.6	1169	273.7			1
South Canterbury	2	3.8	95	180.0			0
Otago	5	2.9	437	255.9			0
Southland	6	5.8	176	170.3	201	194.5	0
Area Outside DHB			45				
National	113	3.0	7358	196.9			5

¹Deaths to date as of 31 December 2005. Overall, estimated to be 50-60% complete. Completion rates may vary by DHB.

²Rate calculated using 2001 Census data and expressed per 100 000 population. Caution advised when interpreting rates based on counts less than ten.

Table 4: 2005 National Chemical Injury Demographic Data from CSO and NZHIS

Demographics		CSO (deaths to date) ¹			NZHIS (admitted patients)		
		No.	Rate ²	% ³	No.	Rate ²	% ³
Intent	Intentional	79	2.1	69.9	4314	115.4	58.6
	Unintentional	14	0.4	12.4	2547	68.2	34.6
	Indeterminate or Unknown Intent	20	0.5	17.7	497	13.3	6.8
Age Group	0-4	0	0.0	0.0	709	261.8	9.6
	5-14	0	0.0	0.0	308	53.4	4.2
	15-24	11	2.2	9.7	1773	351.1	24.1
	25-44	42	3.8	37.2	2733	246.4	37.1
	45-64	48	5.8	42.5	1270	154.0	17.3
	65+	12	2.7	10.6	565	125.4	7.7
Sex	Female	29	1.5	25.7	4608	240.7	62.6
	Male	84	4.6	74.3	2750	150.9	37.4
Ethnicity	European	85	3.3	80.2	5225	200.2	72.2
	Maori	14	2.7	13.2	1146	217.8	15.8
	Pacific Peoples	0	0.0	0.0	314	156.7	4.3
	Asian	7	3.1	6.6	316	139.5	4.4
	Other	0		0.0	232		3.2
	Unknown	7			125		
National		113	3.0		7358	196.9	

¹Deaths to date as of 31 December 2005. Overall, estimated to be 50-60% complete. Completion rates may vary by DHB.

²Rate calculated using 2001 Census data and expressed per 100 000 population. Caution advised when interpreting rates based on counts less than ten.

³Proportion (%) of total cases (for respective data source) where demographic was known.

Table 5: 2005 Auckland DHB Chemical Injury Demographic Data from CSO, NZHIS, and PHU

Demographics		CSO (deaths to date) ¹			NZHIS (admitted patients)			PHU Notifications		
		No.	Rate ²	% ³	No.	Rate ²	% ³	No.	Rate ²	% ³
Intent	Intentional	1	0.3	14.3	426	115.8	57.6	799	217.3	52.5
	Unintentional	2	0.5	28.6	281	76.4	38.0	50	13.6	3.3
	Indeterminate or Unknown Intent	4	1.1	57.1	33	9.0	4.5	674	183.3	44.3
Age group	0-4	0	0.0	0.0	58	230.0	7.8	0		0.0
	5-14	0	0.0	0.0	25	52.9	3.4	1		0.1
	15-24	0	0.0	0.0	191	339.8	25.8	597	1062.2	39.3
	25-44	4	3.2	57.1	265	209.3	35.8	624	492.7	41.1
	45-64	3	4.0	42.9	144	193.2	19.5	256	343.5	16.8
	65+	0	0.0	0.0	57	150.2	7.7	42	110.7	2.8
	Unknown	0			0			3		
Sex	Female	1	0.5	14.3	441	232.4	59.6	677	356.8	44.6
	Male	6	3.4	85.7	299	168.0	40.4	842	473.1	55.4
	Unknown	0			0			4		
Ethnicity	European	4	1.9	57.1	431	208.8	59.4	940	455.3	65.7
	Maori	2	6.9	28.6	79	271.1	10.9	157	538.8	11.0
	Pacific Peoples	0	0.0	0.0	73	167.3	10.1	129	295.6	9.0
	Asian	1	1.6	14.3	106	167.6	14.6	173	273.6	12.1
	Other	0		0.0	37		5.1	32		2.2
	Unknown	0			14			92		
Overall		7	1.9		740	201.2		1523	414.1	

¹Deaths to date as of 31 December 2005. Overall, estimated to be 50-60% complete. Completion rates may vary by DHB.

²Rate calculated using 2001 Census data and expressed per 100 000 population. Caution advised when interpreting rates based on counts less than ten.

³Proportion (%) of total cases (for respective data source) where demographic was known.

Table 6: 2005 Hutt DHB Chemical Injury Demographic Data from CSO, NZHIS, and PHU

Demographics		CSO (deaths to date) ¹			NZHIS (admitted patients)			PHU Notifications		
		No.	Rate ²	% ³	No.	Rate ²	% ³	No.	Rate ²	% ³
Intent	Intentional	0	0.0	0.0	91	69.0	59.5	122	92.5	64.2
	Unintentional	0	0.0	0.0	50	37.9	32.7	58	44.0	30.5
	Indeterminate or Unknown Intent	1	0.8	100	12	9.1	7.8	10	7.6	5.3
Age Group	0-4	0	0.0	0.0	23	225.0	15.0	35	342.3	18.4
	5-14	0	0.0	0.0	6	28.3	3.9	9	42.4	4.7
	15-24	0	0.0	0.0	28	161.9	18.3	47	271.8	24.7
	25-44	0	0.0	0.0	49	121.2	32.0	52	128.6	27.4
	45-64	1	3.5	100	34	120.0	22.2	45	158.9	23.7
	65+	0	0.0	0.0	13	90.5	8.5	2	13.9	1.1
Sex	Female	0	0.0	0.0	109	162.4	71.2	130	193.7	68.4
	Male	1	1.5	100	44	68.0	28.8	60	92.7	31.6
Ethnicity	European	1	1.1	100	115	124.7	76.7	141	152.9	79.2
	Maori	0	0.0	0.0	23	117.5	15.3	21	107.2	11.8
	Pacific Peoples	0	0.0	0.0	4	45.7	2.7	6	68.5	3.4
	Asian	0	0.0	0.0	5	68.8	3.3	3	41.3	1.7
	Other	0		0.0	3		2.0	7		3.9
	Unknown	0			3			12		
Overall		1	0.8		153	116.0		190	144.1	

¹Deaths to date as of 31 December 2005. Overall, estimated to be 50-60% complete. Completion rates may vary by DHB.

²Rate calculated using 2001 Census data and expressed per 100 000 population. Caution advised when interpreting rates based on counts less than ten.

³Proportion (%) of total cases (for respective data source) where demographic was known.

Table 7: 2005 Capital & Coast DHB Chemical Injury Demographic Data from CSO, NZHIS, and PHU

Demographics		CSO (deaths to date) ¹			NZHIS (admitted patients)			PHU Notifications		
		No.	Rate ²	% ³	No.	Rate ²	% ³	No.	Rate ²	% ³
Intent	Intentional	2	0.8	40.0	105	42.7	53.3	250	101.7	61.3
	Unintentional	0	0.0	0.0	72	29.3	36.5	134	54.5	32.8
	Indeterminate or Unknown Intent	3	1.2	60.0	20	8.1	10.2	24	9.8	5.9
Age Group	0-4	0	0.0	0.0	21	121.7	10.7	43	249.2	10.5
	5-14	0	0.0	0.0	12	35.8	6.1	19	56.6	4.7
	15-24	1	2.7	20.0	40	109.9	20.3	123	338.0	30.1
	25-44	0	0.0	0.0	74	90.2	37.6	163	198.7	40.0
	45-64	4	7.8	80.0	31	60.3	15.7	45	87.6	11.0
	65+	0	0.0	0.0	19	75.3	9.6	15	59.4	3.7
Sex	Female	1	0.8	20.0	137	107.7	69.5	288	226.5	71.1
	Male	4	3.4	80.0	60	50.5	30.5	117	98.6	28.9
	Unknown	0			0			3		
Ethnicity	European	5	2.9	100	156	90.5	81.3	313	181.5	79.6
	Maori	0	0.0	0.0	23	94.8	12.0	43	177.3	10.9
	Pacific Peoples	0	0.0	0.0	8	42.8	4.2	12	64.3	3.1
	Asian	0	0.0	0.0	4	21.7	2.1	10	54.3	2.5
	Other	0		0.0	1		0.5	15		3.8
	Unknown	0			5			15		
Overall		5	2.0		197	80.1		408	165.9	

¹Deaths to date as of 31 December 2005. Overall, estimated to be 50-60% complete. Completion rates may vary by DHB.

²Rate calculated using 2001 Census data and expressed per 100 000 population. Caution advised when interpreting rates based on counts less than ten.

³Proportion (%) of total cases (for respective data source) where demographic was known.

Table 8: 2005 Wairarapa DHB Chemical Injury Demographic Data from CSO, NZHIS, and PHU

Demographics		CSO (deaths to date) ¹			NZHIS (admitted patients)			PHU Notifications		
		No.	Rate ²	% ³	No.	Rate ²	% ³	No.	Rate ²	% ³
Intent	Intentional	1	2.6	100	48	125.6	64.9	23	60.2	62.2
	Unintentional	0	0.0	0.0	20	52.4	27.0	13	34.0	35.1
	Indeterminate or Unknown Intent	0	0.0	0.0	6	15.7	8.1	1	2.6	2.7
Age Group	0-4	0	0.0	0.0	5	186.6	6.8	7	261.3	18.9
	5-14	0	0.0	0.0	6	98.1	8.1	3	49.0	8.1
	15-24	0	0.0	0.0	20	484.5	27.0	10	242.2	27.0
	25-44	0	0.0	0.0	27	273.2	36.5	12	121.4	32.4
	45-64	1	10.4	100	10	104.0	13.5	5	52.0	13.5
	65+	0	0.0	0.0	6	103.8	8.1	0	0.0	0.0
Sex	Female	0	0.0	0.0	37	189.2	50.0	21	107.4	56.8
	Male	1	5.4	100	37	198.4	50.0	16	85.8	43.2
Ethnicity	European	1	3.3	100	52	169.2	70.3	20	65.1	66.7
	Maori	0	0.0	0.0	18	333.1	24.3	7	129.6	23.3
	Pacific Peoples	0	0.0	0.0	2	328.4	2.7	0	0.0	0.0
	Asian	0	0.0	0.0	1	228.3	1.4	1	228.3	3.3
	Other	0		0.0	1		1.4	2		6.7
	Unknown	0			0			7		
Overall		1	2.6		74	193.7		37	96.9	

¹Deaths to date as of 31 December 2005. Overall, estimated to be 50-60% complete. Completion rates may vary by DHB.

²Rate calculated using 2001 Census data and expressed per 100 000 population. Caution advised when interpreting rates based on counts less than ten.

³Proportion (%) of total cases (for respective data source) where demographic was known.

Table 9: 2005 West Coast DHB Chemical Injury Demographic Data from CSO, NZHIS, and PHU

Demographics		CSO (deaths to date) ¹			NZHIS (admitted patients)			PHU Notifications		
		No.	Rate ²	% ³	No.	Rate ²	% ³	No.	Rate ²	% ³
Intent	Intentional	No deaths reported to date			57	188.3	65.5	23	76.0	67.6
	Unintentional				22	72.7	25.3	11	36.3	32.4
	Indeterminate or Unknown Intent				8	26.4	9.2	0	0.0	0.0
Age Group	0-4				2	103.2	2.3	6	309.6	17.6
	5-14				3	61.6	3.4	1	20.5	2.9
	15-24				11	355.0	12.6	6	193.6	17.6
	25-44				44	505.2	50.6	13	149.3	38.2
	45-64				18	237.8	20.7	7	92.5	20.6
	65+				9	220.6	10.3	1	24.5	2.9
Sex	Female				61	406.1	70.1	23	153.1	67.6
	Male				26	170.6	29.9	11	72.2	32.4
Ethnicity	European				82	313.7	94.3	25	95.6	100
	Maori				4	157.6	4.6	0	0.0	0.0
	Pacific Peoples	1	666.7	1.1	0	0.0	0.0			
	Asian	0	0.0	0.0	0	0.0	0.0			
	Other	0		0.0	0		0.0			
	Unknown	0			9					
Overall					87	287.5		34	112.3	

¹Deaths to date as of 31 December 2005. Overall, estimated to be 50-60% complete. Completion rates may vary by DHB.

²Rate calculated using 2001 Census data and expressed per 100 000 population. Caution advised when interpreting rates based on counts less than ten.

³Proportion (%) of total cases (for respective data source) where demographic was known.

Table 10: 2005 Southland DHB Chemical Injury Demographic Data from CSO, NZHIS, and PHU

Demographics		CSO (deaths to date) ¹			NZHIS (admitted patients)			PHU Notifications		
		No.	Rate ²	% ³	No.	Rate ²	% ³	No.	Rate ²	% ³
Intent	Intentional	5	4.8	83.3	78	75.5	44.3	138	133.5	68.7
	Unintentional	1	1.0	16.7	75	72.6	42.6	63	61.0	31.3
	Indeterminate or Unknown Intent	0	0.0	0.0	23	22.3	13.1	0	0.0	0.0
Age Group	0-4	0	0.0	0.0	24	338.3	13.6	39	549.7	19.4
	5-14	0	0.0	0.0	10	63.7	5.7	11	70.1	5.5
	15-24	2	15.4	33.3	45	346.4	25.6	45	346.4	22.4
	25-44	3	9.7	50.0	49	158.2	27.8	61	196.9	30.3
	45-64	0	0.0	0.0	36	152.2	20.5	41	173.3	20.4
	65+	1	7.7	16.7	12	92.8	6.8	4	30.9	2.0
Sex	Female	2	3.8	33.3	100	192.3	56.8	124	238.5	61.7
	Male	4	7.8	66.7	76	148.0	43.2	77	150.0	38.3
Ethnicity	European	2	2.3	40.0	144	164.6	83.2	Ethnicity data not collected		
	Maori	2	18.6	40.0	23	213.4	13.3			
	Pacific Peoples	0	0.0	0.0	2	187.3	1.2			
	Asian	1	72.8	20.0	1	72.8	0.6			
	Other	0		0.0	3		1.7			
	Unknown	1			3					
Overall		6	5.8		176	170.3		201	194.5	

¹Deaths to date as of 31 December 2005. Overall, estimated to be 50-60% complete. Completion rates may vary by DHB.

²Rate calculated using 2001 Census data and expressed per 100 000 population. Caution advised when interpreting rates based on counts less than ten.

³Proportion (%) of total cases (for respective data source) where demographic was known.

Table 11: 2005 National Chemical Injury CSO Data by Primary Substance & NZHIS Data by ICD10 Code

CSO (deaths to date) ¹			NZHIS (admitted patients)		
Primary Substance	No.	% ³	ICD10 Code ²	No.	% ³
Carbon Monoxide	57	50.4	X41 + X61 + Y11	3443	32.8
Ethanol	10	8.8	X40 + X60 + Y10	1875	17.9
Methadone	7	6.2	X44 + X64 + Y14	1587	15.1
Nortriptyline	5	4.4	X45 + X65 + Y15	1339	12.8
Ethanol (chronic)	5	4.4	X42 + X62 + Y12	858	8.2
Amitriptyline	4	3.5	X49 + X69 + Y19	780	7.4
Hydrocarbon	3	2.7	X43 + X63 + Y13	256	2.4
Morphine or Heroin	3	2.7	X47 + X67 + Y17	224	2.1
Codeine	2	1.8	X46 + X66 + Y16	72	0.7
Remaining substances (17) only occur once			X48 + X68 + Y18	54	0.5
Total	113		Total	10488	

¹Deaths to date as of 31 December 2005. Overall, estimated to be 50-60% complete. Completion rates may vary by DHB.

²Refer to Table 1 for description of each code. Numbers total to greater than number of hospitalisations because multiple E codes can be assigned to each hospitalisation.

³Proportion (%) of total substances/ICD10 codes (for respective data source) where substance/ICD10 code was known.

Table 12: 2005 Auckland DHB Chemical Injury Data from CSO, NZHIS, and PHU by Substance

CSO (deaths to date) ¹			NZHIS (admitted patients)			PHU Notifications		
Primary Substance	No.	% ³	ICD10 Code ²	No.	% ³	Substance (Top 10)	No.	% ³
Ethanol (chronic)	2	28.6	X41 + X61 + Y11	328	30.2	Ethanol	952	42.9
Ethanol	1	14.3	X40 + X60 + Y10	193	17.8	Paracetamol	116	5.2
Amitriptyline	1	14.3	X44 + X64 + Y14	163	15.0	Benzylpiperazine	65	2.9
Methamphetamine	1	14.3	X45 + X65 + Y15	157	14.5	Zopiclone	58	2.6
Diltiazem	1	14.3	X49 + X69 + Y19	97	8.9	Cannabis	52	2.3
MDMA	1	14.3	X42 + X62 + Y12	87	8.0	Methamphetamine	50	2.3
			X43 + X63 + Y13	29	2.7	Clonazepam	43	1.9
			X47 + X67 + Y17	18	1.7	Ibuprofen	39	1.8
			X46 + X66 + Y16	11	1.0	Spiked Drink	35	1.6
			X48 + X68 + Y18	3	0.3	MDMA	35	1.6
Total	7		Total	1086				

¹Deaths to date as of 31 December 2005. Overall, estimated to be 50-60% complete. Completion rates may vary by DHB.

²Refer to Table 1 for description of each code. Numbers total to greater than number of hospitalisations because multiple E codes can be assigned to each hospitalisation.

³Proportion (%) of total substances/ICD10 codes (for respective data source) where substance/ICD10 code was known.

Table 13: 2005 Hutt DHB Chemical Injury Data from CSO, NZHIS, and PHU by Substance

CSO (deaths to date) ¹			NZHIS (admitted patients)			PHU Notifications		
Primary Substance	No.	% ³	ICD10 Code ²	No.	% ³	Substance (Top 10)	No.	% ³
Ethanol	1	100	X41 + X61 + Y11	75	36.9	Unknown medication/s	26	18.1
			X44 + X64 + Y14	34	16.7	Paracetamol	19	13.2
			X40 + X60 + Y10	29	14.3	Ethanol	13	9.0
			X49 + X69 + Y19	21	10.3	Spider bite	7	4.9
			X42 + X62 + Y12	14	6.9	Zopiclone	6	4.2
			X45 + X65 + Y15	14	6.9	Quetiapine	5	3.5
			X43 + X63 + Y13	7	3.4	Codeine	4	2.8
			X46 + X66 + Y16	5	2.5	Sleeping pills (unspecified)	4	2.8
			X47 + X67 + Y17	4	2.0	Diazepam	3	2.1
			X48 + X68 + Y18	0	0.0	Fluoxetine	3	2.1
Total	1		Total	203				

¹Deaths to date as of 31 December 2005. Overall, estimated to be 50-60% complete. Completion rates may vary by DHB.

²Refer to Table 1 for description of each code. Numbers total to greater than number of hospitalisations because multiple E codes can be assigned to each hospitalisation.

³Proportion (%) of total substances/ICD10 codes (for respective data source) where substance/ICD10 code was known.

Table 14: 2005 Capital & Coast DHB Chemical Injury Data from CSO, NZHIS, and PHU by Substance

CSO (deaths to date) ¹			NZHIS (admitted patients)			PHU Notifications		
Primary Substance	No.	% ³	ICD10 Code ²	No.	% ³	Substance (Top 10)	No.	% ³
Ethanol (chronic)	1	20.0	X41 + X61 + Y11	87	32.7	Paracetamol	74	15.0
Ethanol	1	20.0	X40 + X60 + Y10	47	17.7	Zopiclone	41	8.3
Carbon Monoxide	1	20.0	X49 + X69 + Y19	38	14.3	Codeine	18	3.6
Methadone	1	20.0	X44 + X64 + Y14	34	12.8	Clonazepam	18	3.6
Insulin	1	20.0	X45 + X65 + Y15	24	9.0	Amitriptyline	15	3.0
			X42 + X62 + Y12	20	7.5	Ethanol	14	2.8
			X43 + X63 + Y13	12	4.5	Gamma-hydroxybutyrate	14	2.8
			X47 + X67 + Y17	2	0.8	Fluoxetine	13	2.6
			X46 + X66 + Y16	1	0.4	Paroxetine	12	2.4
			X48 + X68 + Y18	1	0.4	Citalopram	11	2.2
Total	5		Total	266				

¹Deaths to date as of 31 December 2005. Overall, estimated to be 50-60% complete. Completion rates may vary by DHB.

²Refer to Table 1 for description of each code. Numbers total to greater than number of hospitalisations because multiple E codes can be assigned to each hospitalisation.

³Proportion (%) of total substances/ICD10 codes (for respective data source) where substance/ICD10 code was known.

Table 15: 2005 Wairarapa DHB Chemical Injury Data from CSO, NZHIS, and PHU by Substance

CSO (deaths to date) ¹			NZHIS (admitted patients)			PHU Notifications		
Primary Substance	No.	% ³	ICD10 Code ²	No.	% ³	Substance (Top 10)	No.	% ³
Carbon Monoxide	1	100	X41 + X61 + Y11	40	39.2	Ethanol	9	11.8
			X40 + X60 + Y10	19	18.6	Paracetamol	7	9.2
			X44 + X64 + Y14	17	16.7	Ibuprofen	7	9.2
			X45 + X65 + Y15	12	11.8	Diclofenac	4	5.3
			X42 + X62 + Y12	6	5.9	Paroxetine	4	5.3
			X49 + X69 + Y19	4	3.9	Citalopram	4	5.3
			X47 + X67 + Y17	2	2.0	Dextropropoxyphene/paracetamol	4	5.3
			X43 + X63 + Y13	1	1.0	Unknown medication/s	3	3.9
			X46 + X66 + Y16	1	1.0	Zopiclone	3	3.9
			X48 + X68 + Y18	0	0.0	Amitriptyline	3	3.9
Total	1		Total	102				

¹Deaths to date as of 31 December 2005. Overall, estimated to be 50-60% complete. Completion rates may vary by DHB.

²Refer to Table 1 for description of each code. Numbers total to greater than number of hospitalisations because multiple E codes can be assigned to each hospitalisation.

³Proportion (%) of total substances/ICD10 codes (for respective data source) where substance/ICD10 code was known.

Table 16: 2005 West Coast DHB Chemical Injury Data from CSO, NZHIS, and PHU by Substance

CSO (deaths to date) ¹			NZHIS (admitted patients)			PHU Notifications		
Primary Substance	No.	% ³	ICD10 Code ²	No.	% ³	Substance (Top 8)	No.	% ³
No deaths reported to date			X41 + X61 + Y11	42	30.4	Paracetamol	7	16.7
			X44 + X64 + Y14	30	21.7	Ethanol	5	11.9
			X40 + X60 + Y10	20	14.5	Zopiclone	4	9.5
			X42 + X62 + Y12	16	11.6	Unknown medication/s	3	7.1
			X45 + X65 + Y15	11	8.0	Codeine	2	4.8
			X43 + X63 + Y13	5	3.6	Diltiazem	2	4.8
			X49 + X69 + Y19	5	3.6	Insulin	2	4.8
			X46 + X66 + Y16	4	2.9	Quetiapine	2	4.8
			X47 + X67 + Y17	4	2.9			
			X48 + X68 + Y18	1	0.7			
		Total	138					

¹Deaths to date as of 31 December 2005. Overall, estimated to be 50-60% complete. Completion rates may vary by DHB.

²Refer to Table 1 for description of each code. Numbers total to greater than number of hospitalisations because multiple E codes can be assigned to each hospitalisation.

³Proportion (%) of total substances/ICD10 codes (for respective data source) where substance/ICD10 code was known.

Table 17: 2005 Southland DHB Chemical Injury Data from CSO, NZHIS, and PHU by Substance

CSO (deaths to date) ¹			NZHIS (admitted patients)			PHU Notifications		
Primary Substance	No.	% ³	ICD10 Code ²	No.	% ³	Substance (Top 11)	No.	% ³
Carbon Monoxide	4	66.7	X41 + X61 + Y11	78	29.5	Paracetamol	34	10.8
Hydrocarbon	1	16.7	X40 + X60 + Y10	43	16.3	Codeine	17	5.4
Nicotine	1	16.7	X44 + X64 + Y14	38	14.4	Ibuprofen	13	4.1
			X45 + X65 + Y15	35	13.3	Fumes	11	3.5
			X42 + X62 + Y12	30	11.4	Citalopram	10	3.2
			X49 + X69 + Y19	20	7.6	Fluoxetine	10	3.2
			X47 + X67 + Y17	10	3.8	Clonazepam	9	2.8
			X43 + X63 + Y13	8	3.0	Zopiclone	9	2.8
			X46 + X66 + Y16	1	0.4	Carbamazepine	8	2.5
			X48 + X68 + Y18	1	0.4	Lorazepam	8	2.5
Total	6		Total	264		Temazepam	8	2.5

¹Deaths to date as of 31 December 2005. Overall, estimated to be 50-60% complete. Completion rates may vary by DHB.

²Refer to Table 1 for description of each code. Numbers total to greater than number of hospitalisations because multiple E codes can be assigned to each hospitalisation.

³Proportion (%) of total substances/ICD10 codes (for respective data source) where substance/ICD10 code was known.

Table 18: 2005 Summary Demographic Data for Poisonings in Children Aged Less Than 5 Years

Demographics		NZHIS National		Hutt Hospital		Wellington Hospitals		Masterton Hospital		Grey Hospital		Invercargill Hospital	
		No.	% ¹	No.	% ¹	No.	% ¹	No.	% ¹	No.	% ¹	No.	% ¹
Sex	Male	391	55.1	21	60.0	20	46.5	2	28.6	5	83.3	19	48.7
	Female	318	44.9	14	40.0	23	53.5	5	71.4	1	16.7	20	51.3
Ethnicity	European	433	61.5	24	70.6	31	75.6	4	66.7	5	100	Not collected	
	Maori	173	24.6	7	20.6	3	7.3	0	0.0	0	0.0		
	Pacific People	53	7.5	1	2.9	1	2.4	0	0.0	0	0.0		
	Asian	28	4.0	0	0.0	3	7.3	0	0.0	0	0.0		
	Other	17	2.4	2	5.9	3	7.3	2	33.3	0	0.0		
	Unknown	5	N/a	1	N/a	2	N/a	1	N/a	1	N/a		
Overall	No. cases & % of total cases	709	9.6	35	18.4	43	10.5	7	18.9	6	17.6	39	19.4

Note: no poisoning deaths in children aged less than five years have been reported for 2005 from the CSO as of 31 December 2005. ARPHS data are excluded because notifications from Starship Hospital are not received.

¹Proportion (%) of total poisonings in children aged less than five years (for respective data source) where demographic was known.

Table 19: 2005 Substance by PHU for Poisonings in Children Aged Less Than 5 Years

Substance (TOP 10)	Hutt Hospital	Wellington Hospitals	Masterton Hospital	Grey Hospital	Invercargill Hospital	TOTAL	% ¹
Paracetamol	10	17	1	1	6	35	25.5
Unknown medication/s	4	0	2	1	1	8	5.8
Dishwashing powder or detergent	0	1	0	0	5	6	4.4
Cough/flu medication	2	0	0	0	3	5	3.6
Codeine	1	2	0	0	1	4	2.9
Omeprazole	2	0	0	0	2	4	2.9
Hyoscine butylbromide	2	1	0	0	0	3	2.2
Lorazepam	1	1	0	0	1	3	2.2
Oral Contraceptive	0	3	0	0	0	3	2.2
Rat Poison	0	2	0	0	1	3	2.2

¹Proportion (%) of total substances involved with poisonings in children aged less than five years where substance was known.

Table 20: 2005 Summary Demographic Data for Paracetamol Poisonings

Demographics		Auckland City Hospital		Hutt Hospital		Wellington Hospitals		Masterton Hospital		Grey Hospital		Invercargill Hospital	
		No.	% ¹	No.	% ¹	No.	% ¹	No.	% ¹	No.	% ¹	No.	% ¹
Intent	Intentional	110	94.8	6	31.6	54	73.0	6	85.7	6	85.7	29	85.3
	Unintentional	2	1.7	11	57.9	18	24.3	1	14.3	1	14.3	5	14.7
	Indeterminate or Unk intent	4	3.4	2	10.5	2	2.7	0	0.0	0	0.0	0	0.0
Age Group	0-4	N/a	N/a	10	52.6	17	23.0	1	14.3	1	14.3	6	17.6
	5-14	N/a	N/a	0	0.0	8	10.8	1	14.3	0	0.0	5	14.7
	15-24	60	51.7	6	31.6	23	31.1	1	14.3	2	28.6	7	20.6
	25-44	33	28.4	2	10.5	22	29.7	3	42.9	2	28.6	13	38.2
	45-64	22	19.0	1	5.3	4	5.4	1	14.3	2	28.6	3	8.8
	65+	1	0.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Sex	Male	37	32.2	8	42.1	18	24.3	4	57.1	1	14.3	6	17.6
	Female	78	67.8	11	57.9	56	75.7	3	42.9	6	85.7	28	82.4
	Unknown	1	N/a	0	N/a	0	N/a	0	N/a	0	N/a	0	N/a
Ethnicity	European	72	64.3	17	89.5	60	85.7	6	85.7	5	100	Not collected	
	Maori	6	5.4	1	5.3	6	8.6	1	14.3	0	0.0		
	Pacific People	8	7.1	1	5.3	2	2.9	0	0.0	0	0.0		
	Asian	23	20.5	0	0.0	0	0.0	0	0.0	0	0.0		
	Other	3	2.7	0	0.0	2	2.9	0	0.0	0	0.0		
	Unknown	4	N/a	0	N/a	4	N/a	0	N/a	2	N/a		
Overall	No. cases & % of total substances	116	5.2	19	13.2	74	15.0	7	9.2	7	16.3	34	10.8

Note 1: No paracetamol poisoning deaths have been reported for 2005 from the CSO as of 31 December 2005.

Note 2: Paracetamol combinations such as dextropropoxyphene/paracetamol or paracetamol/codeine not included in paracetamol counts.

¹ Proportion (%) of total paracetamol poisonings (for respective data source) where demographic was known.

Table 21: 2005 Summary Demographic Data for Acute Ethanol Poisonings

Demographics		CSO National ¹		Auckland City Hospital		Hutt Hospital		Wellington Hospitals		Masterton Hospital		Grey Hospital		Invercargill Hospital	
		No.	% ²	No.	% ²	No.	% ²	No.	% ²	No.	% ²	No.	% ²	No.	% ²
Intent	Intentional	0	0.0	328	34.5	7	53.8	6	42.9	8	88.9	4	80.0	5	83.3
	Unintentional	3	30.0	4	0.4	3	23.1	7	50.0	1	11.1	1	20.0	1	16.7
	Indeterminate or Unk intent	7	70.0	620	65.1	3	23.1	1	7.1	0	0.0	0	0.0	0	0.0
Age Group	0-4	0	0.0	N/a	N/a	0	0.0	1	7.1	0	0.0	0	0.0	0	0.0
	5-14	0	0.0	1	0.1	1	7.7	0	0.0	0	0.0	0	0.0	0	0.0
	15-24	0	0.0	367	38.6	8	61.5	4	28.6	2	22.2	3	60.0	0	0.0
	25-44	4	40.0	381	40.1	2	15.4	7	50.0	5	55.6	1	20.0	5	83.3
	45-64	6	60.0	170	17.9	2	15.4	2	14.3	2	22.2	1	20.0	1	16.7
	65+	0	0.0	31	3.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Unknown	0	N/a	2	N/a	0	N/a	0	N/a	0	N/a	0	N/a	0	N/a
	Sex	Male	10	100	615	64.7	7	53.8	7	50.0	4	44.4	1	20.0	1
	Female	0	0.0	335	35.3	6	46.2	7	50.0	5	55.6	4	80.0	5	83.3
	Unknown	0	N/a	2	N/a	0	N/a	0	N/a	0	N/a	0	N/a	0	N/a
Ethnicity	European	9	100	589	66.1	10	100	11	78.6	4	66.7	3	100	Not collected	
	Maori	0	0.0	101	11.3	0	0.0	2	14.3	2	33.3	0	0.0		
	Pacific People	0	0.0	103	11.6	0	0.0	0	0.0	0	0.0	0	0.0		
	Asian	0	0.0	80	9.0	0	0.0	0	0.0	0	0.0	0	0.0		
	Other	0	0.0	18	2.0	0	0.0	1	7.1	0	0.0	0	0.0		
	Unknown	1	N/a	61	N/a	3	N/a	0	N/a	3	N/a	2	N/a		
Overall	No. cases & % of total substances	10	8.8	952	42.9	13	9.0	14	2.8	9	11.8	5	11.6	6	1.9

¹ Data as of 31 December 2005. Acute deaths only. In addition there have been five deaths from chronic ethanol exposure reported for 2005.

² Proportion (%) of total ethanol poisonings (for respective data source) where demographic was known.

Table 22: 2005 HSNO Substances from Combined Hospital Notification Data for Selected Hospitals*

Frequency	Substances
24	Methanol/ethanol (methylated spirits)
12	Fumes (unspecified)
10	Hypochlorite (bleach)
8	Household cleaner, petrol
5	Cyanide, detergent
4	Dishwashing powder, gas exposure (?nitric acid, meths), R134A tetrafluoroethane, R22 chlorodifluoromethane, rat poison, solvent based chemical exposure, trifluoroethane
3	Acetic anhydride, air freshener, CRC, glyphosate, insecticide, LPG, sodium hydroxide
2	Disinfectant, glue sniffing, kerosene, methanol, nail polish, pepper spray, perfume, shampoo, turpentine
1	Ados glue, aftershave lotion, antifreeze, battery acid fumes, benzalkonium chloride, biocide, bostik glue, butane, captan, car cleaner, carbamate, carbaryl, carboxin, chemical splash (unspecified), clove oil, deodouriser, dye, eucalyptus oil, white powder from fire extinguisher, flyspray, formalin, glutaraldehyde, hairspray, herbicide, household chemicals (unspecified), hydrocarbon gas (TDC 2000), latex, liquid chlorine/hydrochloric acid, methane, methyl isobutyl ketone, mouthwash, nail polish remover, nitrous oxide, organophosphate, paint, paint thinner, paraffin, pergasol, phosphoric acid, radiator coolant, selenium, spray (unspecified), steriliser tablets, sulphuric acid, tea tree oil, tetrahydrofuran, tetramethylthiuram disulfide, timber preservative.

* Auckland City Hospital, Hutt Hospital, Wellington Hospital, Kenepuru Hospital, Masterton Hospital, Grey Hospital, Invercargill Hospital

Table 23: CSO Chemical Injury Data by District Health Board, 2003 and 2004

DHB	2003					2004				
	"A"	"I"	"U"	Total	Rate ¹	"A"	"I"	"U"	Total	Rate ¹
Northland	1	12	3	16	11.4	1	6	2	9	6.4
Waitemata	2	16	4	22	5.1	2	9	2	13	3.0
Auckland	6	14	6	26	7.1	1	19	8	28	7.6
Counties Manukau	6	16	0	22	5.9	4	9	3	16	4.3
Waikato	4	13	0	17	5.4	4	7	2	13	4.1
Lakes	1	4	0	5	5.2	0	0	0	0	0.0
Bay of Plenty	3	10	2	15	8.4	2	6	2	10	5.6
Tairāwhiti	1	2	0	3	6.8	0	0	0	0	0.0
Taranaki	0	3	1	4	3.9	0	3	4	7	6.8
Hawke's Bay	0	2	0	2	1.4	1	3	0	4	2.8
Whanganui	2	5	0	7	11.0	0	3	0	3	4.7
MidCentral	2	6	0	8	5.2	1	6	4	11	7.1
Hutt	3	8	1	12	9.1	2	4	1	7	5.3
Capital and Coast	3	8	4	15	6.1	2	4	4	10	4.1
Wairarapa	0	2	0	2	5.2	0	4	0	4	10.5
Nelson Marlborough	0	2	0	2	1.6	0	2	2	4	3.3
West Coast	1	0	0	1	3.3	0	4	1	5	16.5
Canterbury	10	20	3	33	7.7	5	24	4	33	7.7
South Canterbury	0	2	0	2	3.8	0	2	0	2	3.8
Otago	2	7	0	9	5.3	4	12	1	17	10.0
Southland	2	5	0	7	6.8	0	4	1	5	4.8
Unknown	0	1	0	1		0	0	1	1	
National	49	158	24	231	6.2	29	131	42	202	5.4

¹Rate calculated using 2001 Census data and expressed per 100 000 population. Caution advised when interpreting rates based on counts less than ten.

"A" = Accidental or Unintentional

"I" = Intentional

"U" = Unknown Intent

Table 24: CSO Chemical Injury Demographic Data, 2003 and 2004

Demographics		2003					2004				
		"A"	"I"	"U"	Total	Rate ¹	"A"	"I"	"U"	Total	Rate ¹
Age Group	0-4	0	0	0	0	0.0	0	0	0	0	0.0
	5-14	1	0	0	1	0.2	1	1	0	2	0.3
	15-24	10	14	11	35	6.9	5	17	8	30	5.9
	25-44	22	69	10	101	9.1	14	50	18	82	7.4
	45-64	13	52	2	67	8.1	9	42	15	66	8.0
	65+	3	21	1	25	5.6	0	21	1	22	4.9
	Unknown	0	2	0	2		0	0	0	0	
Sex	Female	20	54	8	82	4.3	10	33	12	55	2.9
	Male	28	104	16	148	8.1	19	98	30	147	8.1
	Unknown	1	0	0	1		0	0	0	0	
Ethnicity	European	28	130	16	174	6.7	18	110	27	155	5.9
	Maori	17	8	7	32	6.1	10	5	10	25	4.8
	Pacific Peoples	1	0	1	2	1.0	0	1	0	1	0.5
	Asian	0	5	0	5	2.2	1	2	1	4	1.8
	Other	0	0	0	0		0	1	2	3	
	Unknown	3	15	0	18		0	12	2	14	
National		49	158	24	231	6.2	29	131	42	202	5.4

¹Rate calculated using 2001 Census data and expressed per 100 000 population. Caution advised when interpreting rates based on counts less than ten.

"A" = Accidental or Unintentional

"I" = Intentional

"U" = Unknown Intent

Table 25: CSO Chemical Injury Data by Substance Class, 2003 and 2004

Substance Class	2003		2004	
	No.	% ¹	No.	% ¹
Agrichemicals	4	1.8	4	2.0
Chemical/Drugs of Abuse	51	22.4	36	18.2
Herbal Remedy/Dietary Supplement	0	0.0	0	0.0
Household/Domestic Chemicals ²	103	45.2	94	47.5
Industrial Chemicals	0	0.0	1	0.5
Therapeutics	70	30.7	63	31.8
Unknown/Missing	3		4	
Total	231		202	

¹Proportion (%) of total substances (for respective year) where substance class was known.

²Includes carbon monoxide (vehicle exhaust).

Table 26: CSO Chemical Injury Data by Primary Substance, 2003 and 2004

Year	Unintentional		Intentional		Unknown Intent		All Intents	
	Primary Substance (TOP 6)	No.	Primary Substance (TOP 5)	No.	Primary Substance (TOP 5)	No.	Primary Substance (TOP 6)	No.
2003	Hydrocarbon	10	Carbon Monoxide	99	Methadone	4	Carbon Monoxide	103
	Morphine or Heroin	8	Morphine or Heroin	7	Ethanol	3	Morphine or Heroin	18
	Methadone	8	Zopiclone	5	Morphine or Heroin	3	Hydrocarbon	17
	Ethanol	5	Codeine	5	Hydrocarbon	2	Methadone	12
	Carbon Monoxide	4	Hydrocarbon	5	Citalopram	2	Ethanol	9
	Ethanol (chronic)	4					Codeine	6
2004	Primary Substance (TOP 4)	No.	Primary Substance (TOP 5)	No.	Primary Substance (TOP 3)	No.	Primary Substance (TOP 5)	No.
	Methadone	8	Carbon Monoxide	88	Ethanol	8	Carbon Monoxide	90
	Hydrocarbon	5	Amitriptyline	5	Methadone	7	Methadone	16
	Morphine or Heroin	4	Dothiepin	4	Morphine or Heroin	7	Morphine or Heroin	13
	Dihydrocodeine	2	Nortriptyline	3			Ethanol	10
			Dextropropoxyphene/Paracetamol	3			Hydrocarbon	9

Table 27: Demographics for CSO HSNO Substances, 2003 and 2004 Combined

Note: where count of substance is not greater than one, details are not included in the table to protect privacy.
 Relevant substances include: ethylene glycol, methanol and caustic soda.

Characteristics	HSNO Substances			
	Hydrocarbon	Cyanide	Glyphosate	Paraquat
Number (primary substance)	26	3	3	2
DHB				
Northland	0	0	0	0
Waitemata	1	0	0	0
Auckland	2	0	0	0
Counties Manukau	3	0	0	2
Waikato	2	0	1	0
Lakes	0	1	0	0
Bay of Plenty	1	2	1	0
Tairāwhiti	0	0	0	0
Taranaki	0	0	0	0
Hawke's Bay	0	0	0	0
Whanganui	0	0	0	0
MidCentral	0	0	1	0
Hutt	3	0	0	0
Capital and Coast	4	0	0	0
Wairarapa	0	0	0	0
Nelson Marlborough	1	0	0	0
West Coast	1	0	0	0
Canterbury	5	0	0	0
South Canterbury	0	0	0	0
Otago	1	0	0	0
Southland	2	0	0	0
Intent				
Intentional	7	2	3	1
Unintentional	15	0	0	1
Indeterminate/Unknown	4	1	0	0
Age Group (years)				
0-4	0	0	0	0
5-14	2	0	0	0
15-24	11	0	0	1
25-44	6	3	0	0
45-64	7	0	2	1
65+	0	0	1	0
Sex				
Female	6	1	1	1
Male	20	2	2	1
Ethnicity				
European	13	1	3	0
Māori	7	1	0	1
Pacific People	1	0	0	1
Asian	1	0	0	0
Other	1	0	0	0
Unknown	3	1	0	0

1 Hydrocarbon includes petrol, turpentine, LPG, fly spray, lighter fluid etc.

APPENDIX 2

Chemical category working definitions with examples:

- **Therapeutics:** prescription or non-prescription drugs are included in this category even if they are used inappropriately (i.e. deliberately with intent to injure, or with intent to abuse but not injure).
- **Agrichemicals:** Includes pesticides and licensed veterinary medicines.
- **Industrial chemicals:** i.e. solvents and caustic chemicals used in an industrial or occupational setting. The same chemicals may also be found in the home (e.g. isopropyl alcohol), and be covered under household/domestic.
- **Household/domestic chemicals:** cleansers, detergents, methylated spirits (accidents only), carbon monoxide, etc...
- **Chemicals/drugs of abuse:** Includes chemicals of addiction. Methylated spirits, ethanol, methadone, heroin, cocaine, methamphetamine, ecstasy, etc...
- **Herbal remedies/dietary supplements:** vitamins, natural product remedies, etc...
- **Plants:** garden plants
- **Bites/Stings:** spider bites, bee stings
- **Other/Unknown**

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