Agricultural & Veterinary Chemicals: Exposure patterns & health risks

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For discussion

- Ag sector poorly understood / protected
- Rise of AgVet Chemical dependence
- Known impacts on human health
- A study to assess exposure risk
- Community self-reported exposure

Protection for Ag sector

- Union protection
  - Minimal. Farmers Fed'n
- OH&S leg'n
  - Minimal – employees only ?
  - DPI's compliance monitoring – minimal - Enacted?
- Chem Reg'n
  - APVMA reports to DAFF, not DoHA
- Research
  - Minimal – a few centres,
  - 'Private' business
- Risk
  - Selves, families, children

Agricultural & Veterinary Chemicals (AgVets)

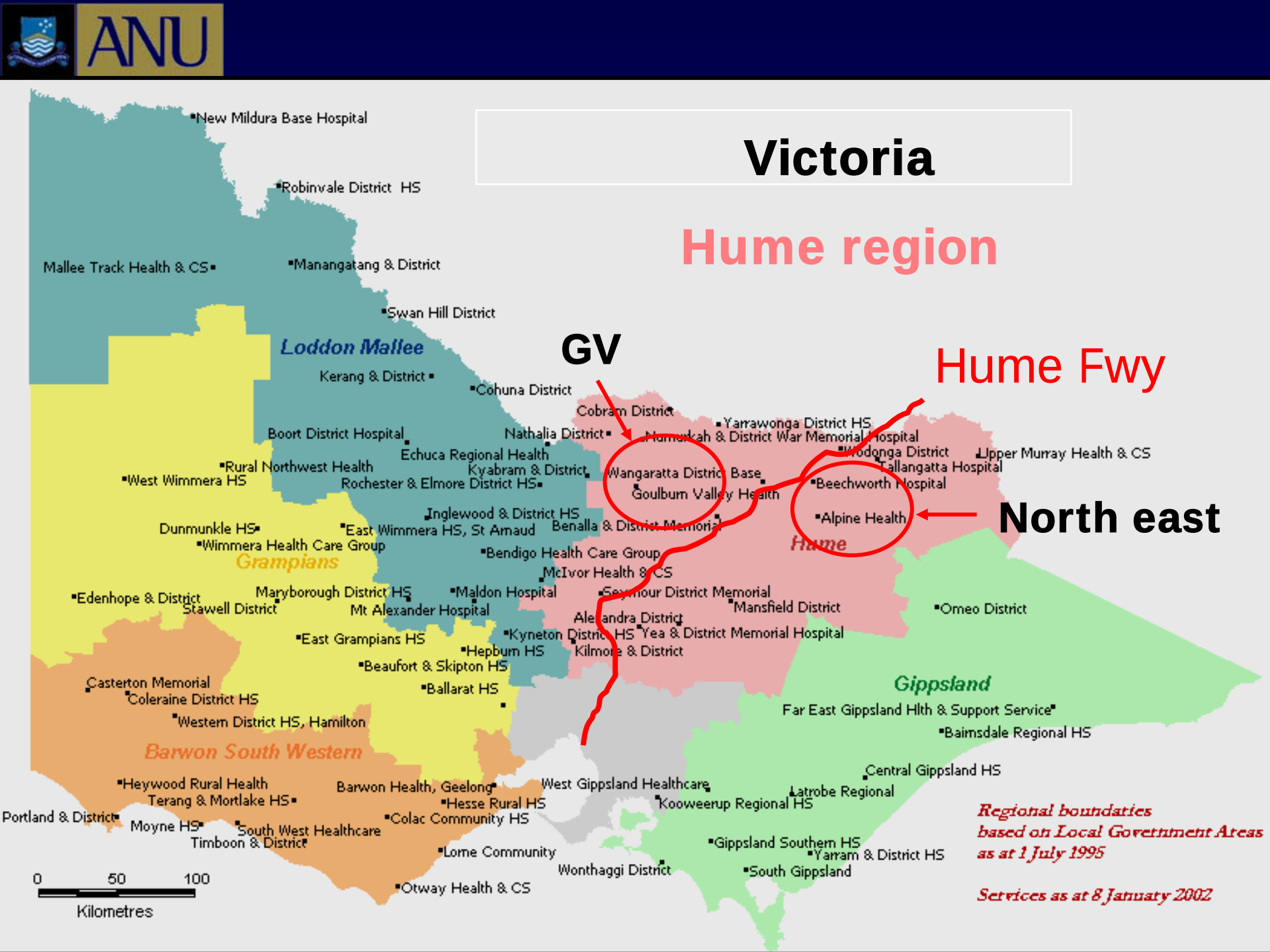
- 1950-90 Aust farm output ⇧ 250 %
- AgVets ⇧ yield = ⇧ profit
- ⇨ ⇨ Rapid rise in AgVet use
- Herbicides sales ⇧ 40% in 4 yrs
- Insecticides ⇧ 40% in last 10 years

Health impacts of chemical exposure

- Solid cancers
- Non-Hodgkin's lymphoma
- Leukaemia
- Neurological and mental health
- Immune system impairments – MCS, CFS, Diabetes
- Dermatological
- Effects on children's health
- Developmental abnormalities
- Endocrine Disruptors
- Other – *almost all organs have demonstrated damage as a result of exposure*

Safety of Chemicals

- Europe & USA estimate 100,000 chemicals on their registers
- 75% of these **have not received 'adequate' testing for human health or environmental safety** (90% by volume)
- Australia – 40,000 chemicals on register,
- 125 assessed (= 0.03%)
- 45 of the 115 Priority Chemicals of Concern tested


Victoria
Hume region
GV
Hume Fwy
North east
New Mildura Base Hospital
Robinvale District HS
Mallee Track Health & CS
Manangatang & District
Swan Hill District
Loddon Mallee
Kerang & District
Cohuna District
Cobram District
Yarrawonga District HS
Boort District Hospital
Nathalia District
Numurkah & District War Memorial Hospital
Echuca Regional Health
Rural Northwest Health
Kyabram & District
Wangaratta District Base
Goulburn Valley Health
Beechworth Hospital
West Wimmera HS
Rochester & Elmore District HS
Inglewood & District HS
Alpine Health
Dunmunkle HS
East Wimmera HS, St Arnaud
Benalla & District Memorial
Wimmera Health Care Group
Hume
Grampians
Bendigo Health Care Group
McIvor Health & CS
Edenhope & District
Maryborough District HS
Maldon Hospital
Seymour District Memorial
Stawell District
Mt Alexander Hospital
Mansfield District
Omeo District
Alexandra District
East Grampians HS
Kyneton District HS
Yea & District Memorial Hospital
Hepburn HS
Kilmore & District
Beaufort & Skipton HS
Casterton Memorial
Ballarat HS
Gippsland
Coleraine District HS
Far East Gippsland Hlth & Support Service
Western District HS, Hamilton
Baimsdale Regional HS
Barwon South Western
Central Gippsland HS
Heywood Rural Health
Barwon Health, Geelong
West Gippsland Healthcare
Latrobe Regional
Terang & Mortlake HS
Hesse Rural HS
Kooweerup Regional HS
Portland & District
Colac Community HS
Moyne HS
South West Healthcare
Timboon & District
Gippsland Southern HS
Lorne Community
Yarram & District HS
Wonthaggi District
South Gippsland
Otway Health & CS
0
50
100
Kilometres
Regional boundaries based on Local Government Areas as at 1 July 1995
Services as at 8 January 2002


Tarax
SELF SERVICE

Multi method approach

- Systematic review of the literature: exposure-health link
- Community survey: 2 Rural Victorian Communities
  - CATI 1050 households = 3,250 people
  - Exposure, perceived risks, health status
  - Perceptions of link, experience with H providers
- Provider interviews
  - GP's, CHC's, Allied & Complementary H
  - Level of environmental health service
- DH Surveillance
  - Monitoring, data capture, statewide H Surveys
- Desk Top study
  - Tox training, Env H Workforce in Aus, Aus Chem Mgt Framework
  - International Comparisons on all above

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Research Questions

What is the exposure risk among rural communities?

- Exposure history – years of farming
- Exposure frequency – usage / day/wk
- Chemical groups used
- Chemical users course taken
- PPE adopted
- Attitudes to chemical risk / avoidance
- Practices to avoid exposure
- Self reported health status
- Belief that family ill-health is related to exposure

Occupational Exposure

- 45% in Goulburn valley worked > 30 years
- 40% exposed > 45 years (including childhood)
- 95% of household reported some agricultural chemicals usage
- All of these used multiple chemicals
- 73% stored chems
- 77% used chemicals near house (eg Veg garden)
- 63% worked ‘VERY closely’ (skin & fumes)

Occupational Exposure

- 47% use AgVets daily, & another
- 35% use weekly
- 83% applied chemicals at least weekly during high season
- 59% Worked with Veterinary chemicals
  - 98% of these also Hort Chems
- 86% Worked with Horticultural chemicals
  - 66% also with Vet chems
- 49% had worked with dieldrin

Occupational Exposure

- 36% exposed *many times* by spray drift
- 14% *never* exposed to spray drift
- Chemical users course = 41%
- 64% sometimes, rarely or never wear protective clothing when applying chemicals
- Chemicals also get into their water supply, via spray drifting onto rooves with water tanks, or seeping into the aquifers supplying bore water.

Industry & Cancer

- Grapes 27%
- Tobacco 28%
- Fruit / nuts 26%
- Olives 27%
- Vegetables 29%
- 54% of households with cancer worked with fruit / vegetables

Environment – cause of ill Health??

Env cause	%	Env Factor	%
Yes definitely	16%	Ag Chemicals	68%
Yes Probably	15%	Climate	16%
Possibly	15%	Indust Chem's	23%
No unlikely	32%	Pollution	21%
No definitely	32%	Radiation	8%

Belief Environment / health link

- *Strong* correlation with education
- *No* correlation to income
- Groups more inclined to believe in link
  - Younger age groups
  - Families with a child with a disability
  - Families who had miscarriage/s
  - Families with a member with sensitivities
  - Families with a member with cancer
  - Families with member suffering immune disorders

The Aarhus Convention

Adopted by the UN in 1998.

" In order to contribute to the protection of the right of every person of present and future generations to live in an environment adequate to his or her health and well-being, each Party shall guarantee the rights of :

- access to information,
- public participation in decision-making, and
- access to justice in environmental matters …"

Epi Problems In Env H

- Ambient levels difficult to determine
- Body burdens difficult to determine
- Measurements not conducted
- Long term latency / incubation time
- Ill-defined clinical effects
- Variable dose relationships – genetic involvement
- Low incidence serious side effects
- Confounding
- Occupations & exposures change - migration

Other problems

- Problems with demonstrating causality
  - No RCTs available
  - Delayed evidence of harm
- Confounding
  - Multiple exposures
  - Mixtures
  - Long lag time
- Australia's small research base
- Dominance of biomedical research

THE AUSTRALIAN NATIONAL UNIVERSITY

Thank You

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