Photophytodermatitis
(Celery Burns in Backpackers)
Occupational medicine disrupts farming practice

Dr. A. Jeremijenko
Dr G Brierly
The farm (near Gatton)
Gatton Hospital
Celery Burns – Gatton Hospital
Celery Burns

- 4 Italians
- Backpackers

Burns to
- A) Hand -1
- B) Forehead
- C) Legs
- D) Hand -2
Nurses knew about celery burns

Celery burns every year

Backpackers (May)

Steroids, Antibiotics

? Celery Juice
Celery Burns

Shorts and sneakers (not boots)

Gloves were provided

Hats – brought their own

Burns got worse before improving

Biopsy - hand blister
Figure 3: Haemotoxylin and Eosin stained images of 2mm punch biopsies taken from dorsum of the hand.

A. x100 magnification displaying bullae and normal tissue.
B. x200 magnification of separated layers of epidermis exhibiting detachment of stratum corneum from stratum lucidum.
C. x200 magnification demonstrating stromal purpura with foci suggestive of early leukocytoclastic vasculitis.
D. x400 magnification image indicative of necrotic keratinocytes.
Phyto-photo-dermatitis: The other "lime" disease
Site Visit - With medical student

Here is the list of the places and employers you can work for...
Two celery stalks sent for analysis - Southern Cross University
Table 1: Estimated amount of Psoralens in celery samples calculated as bergapten

<table>
<thead>
<tr>
<th>Sample name</th>
<th>Lab ID</th>
<th>Psoralens (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Celery 1</td>
<td>172695</td>
<td>61.78</td>
</tr>
<tr>
<td>Celery 2</td>
<td>172696</td>
<td>55.82</td>
</tr>
</tbody>
</table>
Celery – Bergaptens (like psoralen)
Psoralen and Ultraviolet A Light Therapy for Psoriasis
Robert S. Stern, M.D.

August 16, 2007
DOI: 10.1056/NEJMct072317
PUVA therapy - Psoralen orally (Methoxsalen) two hours prior to UVA therapy Treats Psoriasis Vitiligo

PUVA therapy for hands

Whole body PUVA therapy (psoralen)
Psoralen binds between DNA

Becomes a mutagen when exposed to UVA
Psoralens and Bergaptens

Drugs used to treat vitiligo
Dec 2009 Journal of Pharmacy and Pharmaceutical Science

Psoralen and Bergapten

Psoralen Core

$R = H$: psoralen
$R = OCH_3$: bergapten
Backpackers - precarious employment

1. Low skilled temporary migrant workers

2. Employment / OHS conditions

3. Vulnerable workforce

4. Harsh environment
"They (the farmers) don’t care about you – just enough for you to come back tomorrow…

"the pressure is to harvest quickly and continuously.

“dodgy contractors cram 25 illegal workers in a house...give them a mattress, and charge each one A$85 to A$125 a week rent
“… the scheme is so badly run it often amounts to little more than modern-day slavery.’

“they are exploited into carrying out Australians’ dirtiest, unsafest work, in the most remote and inhospitable areas.”

"The employers themselves often take advantage by paying workers next to nothing.

“Verbal and sexual abuse and harassment are rife”
OSH: regulation and risk

1. Risk-free work environment

2. Information, training, instruction and supervision (NESB)

3. Safe handling of substances ? Psoralen

4. Eliminate or minimise the risks. - ? How

( Local worker – wore aprons / gloves )
Quotes from paper

1. Farmers - provide PPE
   (low level of compliance)

2. Responsibility for managing risks
   - the workers

3. Farmers – think ‘common sense’
   ‘part of the job’
Multiple deaths

27 yo Belgium Male ? Heat Watermelon picker Nov 2017
“We encourage people to take care of themselves and their mates, stay hydrated”

24-year-old German
Died 2009 Heat stress
In 2011 fined A$25,000
- Failing to supply drinking water
Risk communication

WHO / Sandman

Farm managers. Farm workers

Be aware of risk

Strategy to reduce this risk
<table>
<thead>
<tr>
<th>What can be done</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Risk Assessment</td>
</tr>
<tr>
<td>Medium</td>
</tr>
<tr>
<td>Health Surveillance</td>
</tr>
<tr>
<td>Weak</td>
</tr>
<tr>
<td>Instruction and Training</td>
</tr>
<tr>
<td>Medium</td>
</tr>
<tr>
<td>First Aid and Medical Emergency</td>
</tr>
<tr>
<td>Response</td>
</tr>
<tr>
<td>Medium</td>
</tr>
<tr>
<td>Addressing Occupational Diseases</td>
</tr>
<tr>
<td>Weak</td>
</tr>
<tr>
<td>Record Keeping</td>
</tr>
<tr>
<td>Medium</td>
</tr>
<tr>
<td>Health Promotion</td>
</tr>
<tr>
<td>Weak</td>
</tr>
</tbody>
</table>
Return to Brisbane - Mater Emergency

Started “TeleDr”

10 years at Mater - Centre of Excellence - Work Injuries
Time to change practice - 4 years

Stay at work vs Industry average
Stability vs Gig economy

Hospitals (Except Psychiatric Hospitals)

13/14: [Graph Data]
14/15: [Graph Data]
15/16: [Graph Data]
16/17: [Graph Data]
17/18: [Graph Data]

Stay at work vs Industry average
Outbreak investigation

1. Identify investigation team and resources
2. Establish existence of an outbreak
3. Verify the diagnosis
4. Construct case definition
5. Find cases systematically
6. Epidemiology/develop hypotheses
7. Evaluate hypotheses/ additional studies
8. Implement control measures
9. Communicate findings
10. Maintain surveillance