The experience of living on contaminated land and its effect on mental health and notions of home

Rupert Legg
Institute for Sustainable Futures
University of Technology Sydney

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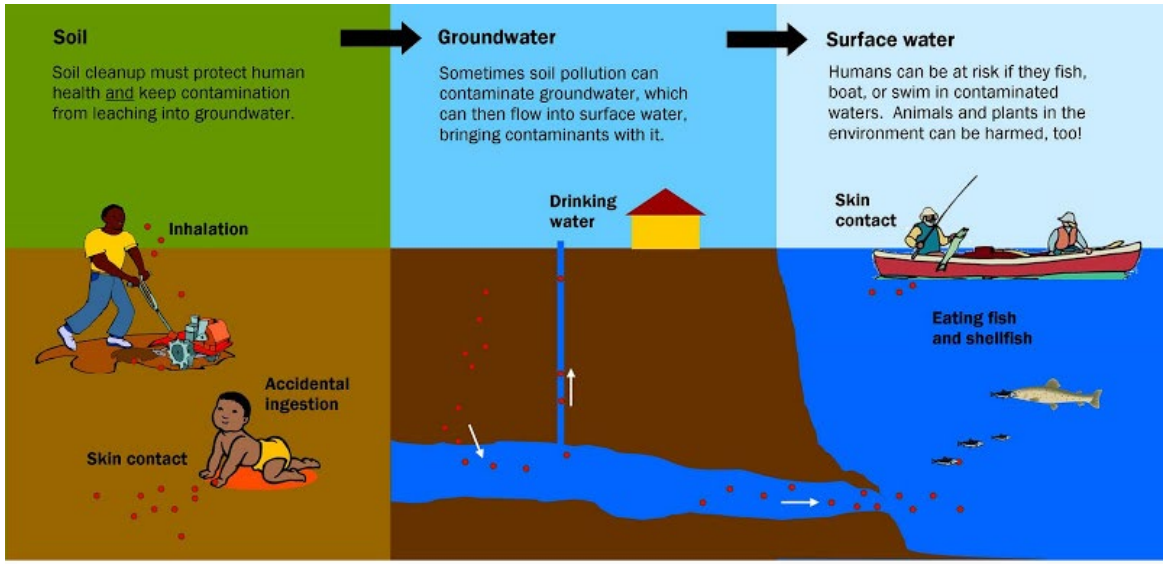
Introduction

- Over the past 50 years concern has grown over contaminated land
- Contaminated land has an above normal concentration of a substance that ‘presents a risk of harm to human health or any other aspect of the environment’ (*Contaminated Land Management Act 1995, S5.1*)
- Majority of academic attention has been placed on:
  - Understanding the physical health effect of exposure to contaminated land (Landrigan et al., 2018)
  - Methods of measuring this exposure
  - Ways of preventing this exposure (remediation techniques)

Contaminated Land and Physical Health

- Exposure occurs through inhalation, ingestion or dermal absorption (WHO, 2006)
- Exposure is often estimated by:
  - *Direct methods:* measure concentration of contaminant in environment and individual contact time
  - *Biomarkers:* measure concentration of contaminant in a person
  - *Modelling:* use data on distribution and concentration of contaminant combined with people's potential interaction
- Effects: cancer, early mortality, birth defects, neurological impairment, and many more (Brender et al., 2011; Landrigan et al., 2018)
- Contaminants: heavy metals, hazardous waste, chemicals and nuclear waste (Brender et al., 2011)



Possible pathways of exposure to contaminants
Cleanup protects human health and the environment. Cleanup levels for soil must protect groundwater and surface water, too.

Source: http://ecologywa.blogspot.com/2010/09/around-sound-future-land-use-and.html

Aims

- Some suggest that the mental health outcomes of living on contaminated land could be even larger than physical health effects (Couch & Coles, 2011; Matthies et al., 2000)
- The mental health effects are less explored (McIntyre et al., 2018)

  A review of the health impacts of air pollution found only 3 of 77 papers investigated mental health (Pascal et al., 2013)

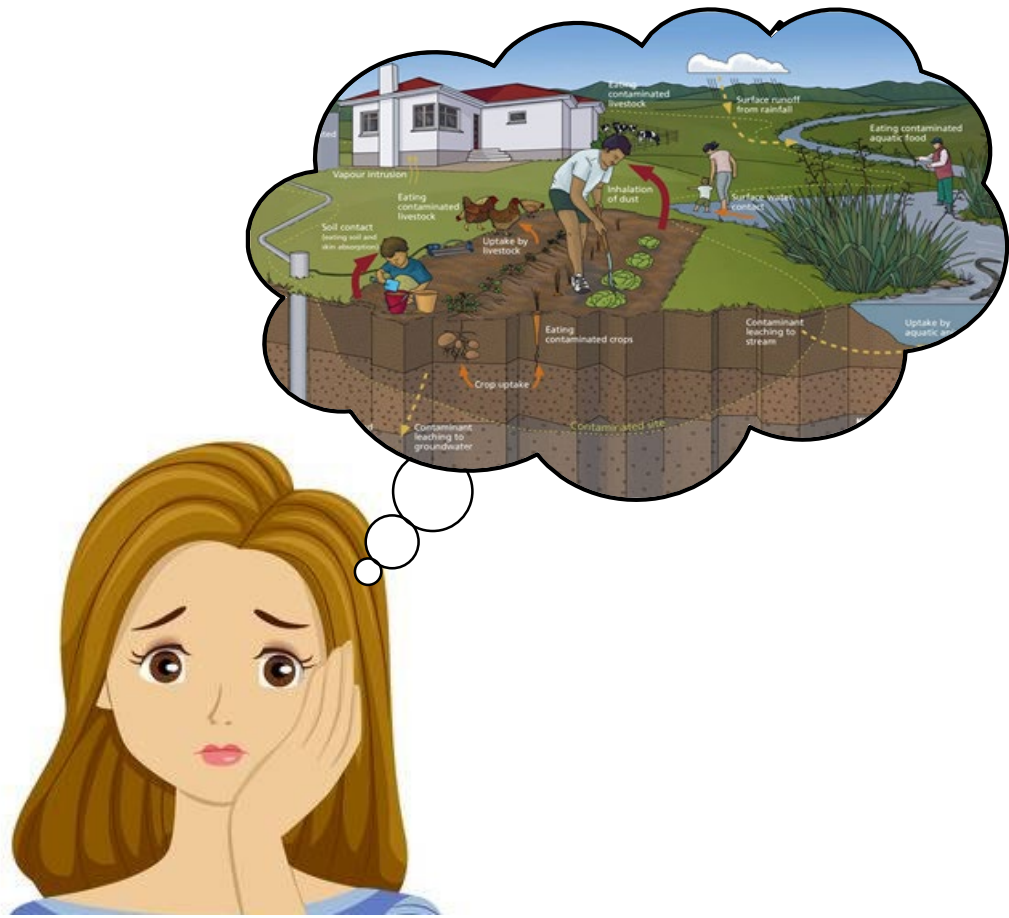
  A review by Brinkel et al. (2009) focussed on *exposure* and mental health, not the actual experience
- This research aimed to address this gap by:
  1. Reviewing the literature to determine how the experience of living on contaminated land could impact mental health
  2. Conceptualising which factors mediate and moderate residents' mental health outcomes
  3. Focussing particularly on how sense of place and notions of home change as a result of this subjective experience

Methodology

- The following databases were searched: MEDLINE, PsycINFO, Scopus and Web of Science
- Search strategy:
  - “environmental pollut*” OR “soil pollut*” OR “contamin*”
  - AND “environmental hazard*” OR “hazardous waste*” OR “toxic waste*” OR “toxic site*” OR “environmental incident*” OR “environmental disaster*” OR “contaminated site*” OR “nuclear” OR “heavy metal*”
  - AND “mental health” OR “wellbeing” OR “well-being” OR “mental illness” OR “mental disorder*” OR “psychological symptom*”
- Hand-search of grey literature, Google Scholar and citations of reviewed articles
- 370 articles searched, of which 30 were reviewed
- The reviewed articles were thematically synthesised so the factors contributing to mental health outcomes could be identified

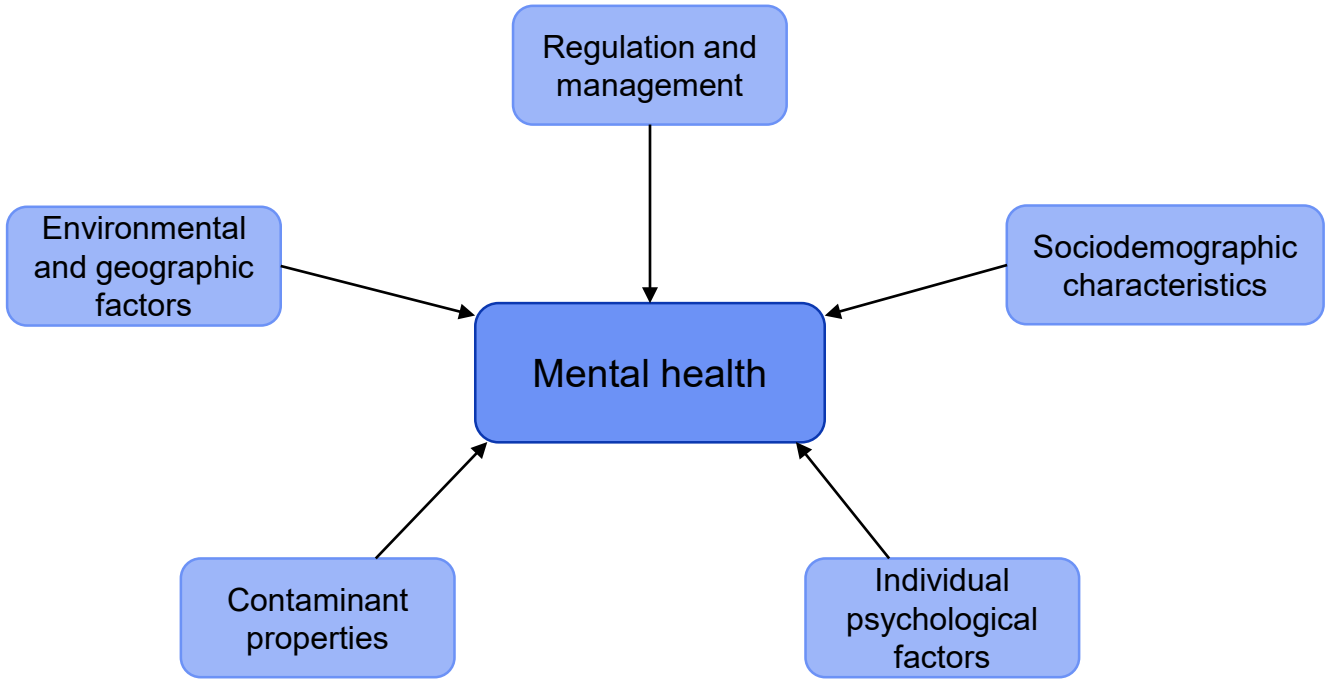
Results – Contaminated Land and Cognitive Processes

- The subjective experience of living on contamination may result in compounding/delayed health effects (Landrigan et al., 2018)
- Raised stress, anger, worry, fear, depression and anxiety levels have been found in those living on contaminated land (Couch and Coles, 2011; Matthies et al., 2000; McIntyre et al., 2018; Prior et al., 2018)
- Distress, unwanted and uncontrollable thoughts, emerges as a result of a perceived stressful event or *stressor* (Brosschot et al., 2006)
  - The discovery that one's local environment is potentially damaging to their health is an acute stressor
  - This can become chronic through the proliferation of this distress (Kemeny, 2003)
- When this distress becomes chronic, there is an increased risk of both physical and psychological illness
- This can manifest
  - Pathologically e.g. as generalised anxiety disorder (GAD) or major depressive disorder (MDD) (Hirsch and Matthews, 2012)
  - Physiologically e,g, chronic stress linked to inflammation and immune responses that increase risk of physical illness (Brosschot et al., 2006)



Source: https://www.cph.co.nz/your-health/contaminated-land/

Factors Predicing Mental Health Outcomes



- Literature review identified these factors
- My research will focus on all of these factors
- In this presentation, individual psychological factors, mainly notions of home and sense of place, will be expanded upon

Contaminated Land and the Home

- Notions of home and sense of place are critical for emotional wellbeing (Williams, 2002)
- A strong notion of home provides a sense of security and protection (Mallett, 2004)
  - Contamination can dissociate the home from its previous associations of ‘privacy, protection, security, amenity, and self-identity’ (Prior et al., 2018, p. 60)
  - No study examined how different notions of home predicted psychological symptoms
- Sense of place is the ‘emotional and cognitive experience linking people to places’ (Bonaiuto et al., 2016, p. 34)
  - When one’s local environment deteriorates, such as with contamination, those with a greater sense of place lose connections with it, known as ‘solastalgia’ (Albrecht et al., 2007)
- However, recent findings do not confirm this:
  - McIntyre et al. (2018) found sense of place positively predicted worry
  - Prior et al. (2018) found no significant relationship between sense of place and worry
  - Bonaiuto et al. (2016) found strong sense of place caused people to worry less
- More research is needed to unravel this

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