



# Conducting a Literature Search & Evidence Review: The NCCEH Approach

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# Outline

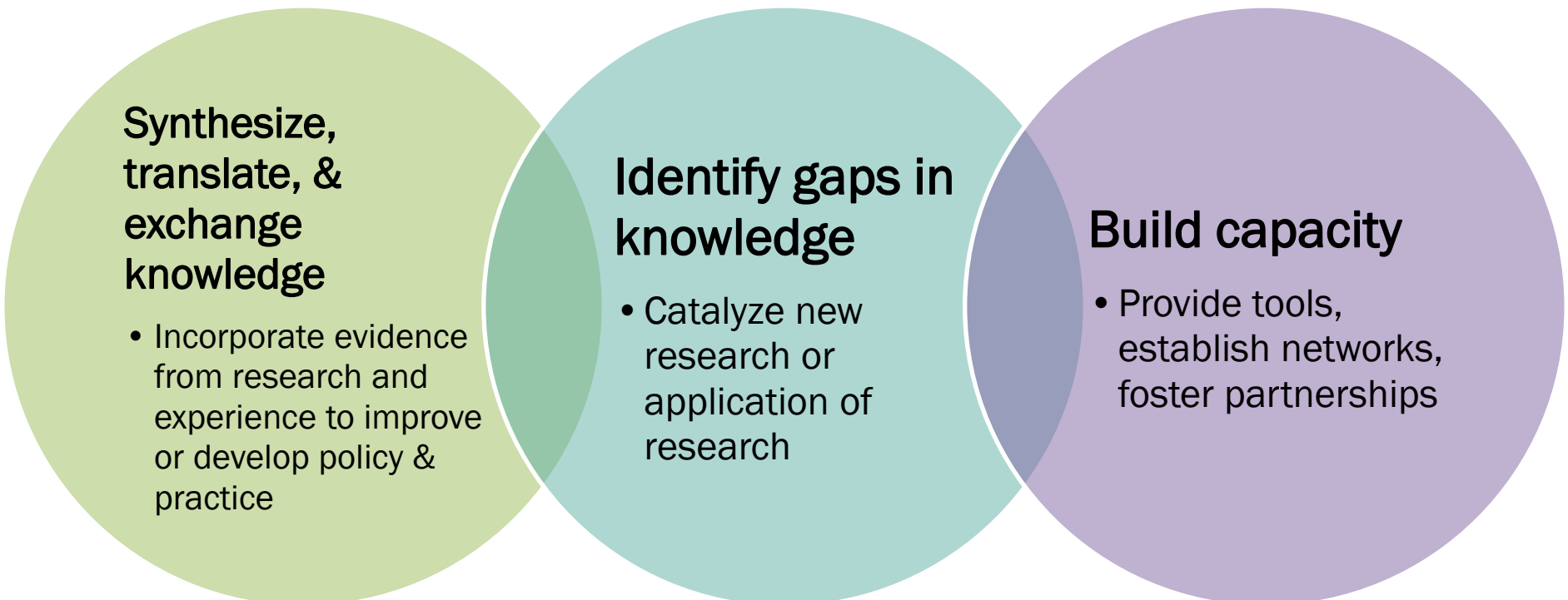
1. Intro to the NCCEH
  - Strategic priorities
  - KT product types
  - Current project highlights
    - Healthy Built Environment
    - Cannabis
2. What is evidence-informed decision making (EIDM)?
3. Knowledge Translation
  - Case examples
4. Step by step: Literature Reviews
5. NCCEH Ron de Burger Student Award





Established by the Public Health Agency of Canada in 2005 to promote the use of knowledge and evidence by public health practitioners and policy-makers in Canada.

# NCCEH's Mandate



## Synthesize, translate, & exchange knowledge

- Incorporate evidence from research and experience to improve or develop policy & practice

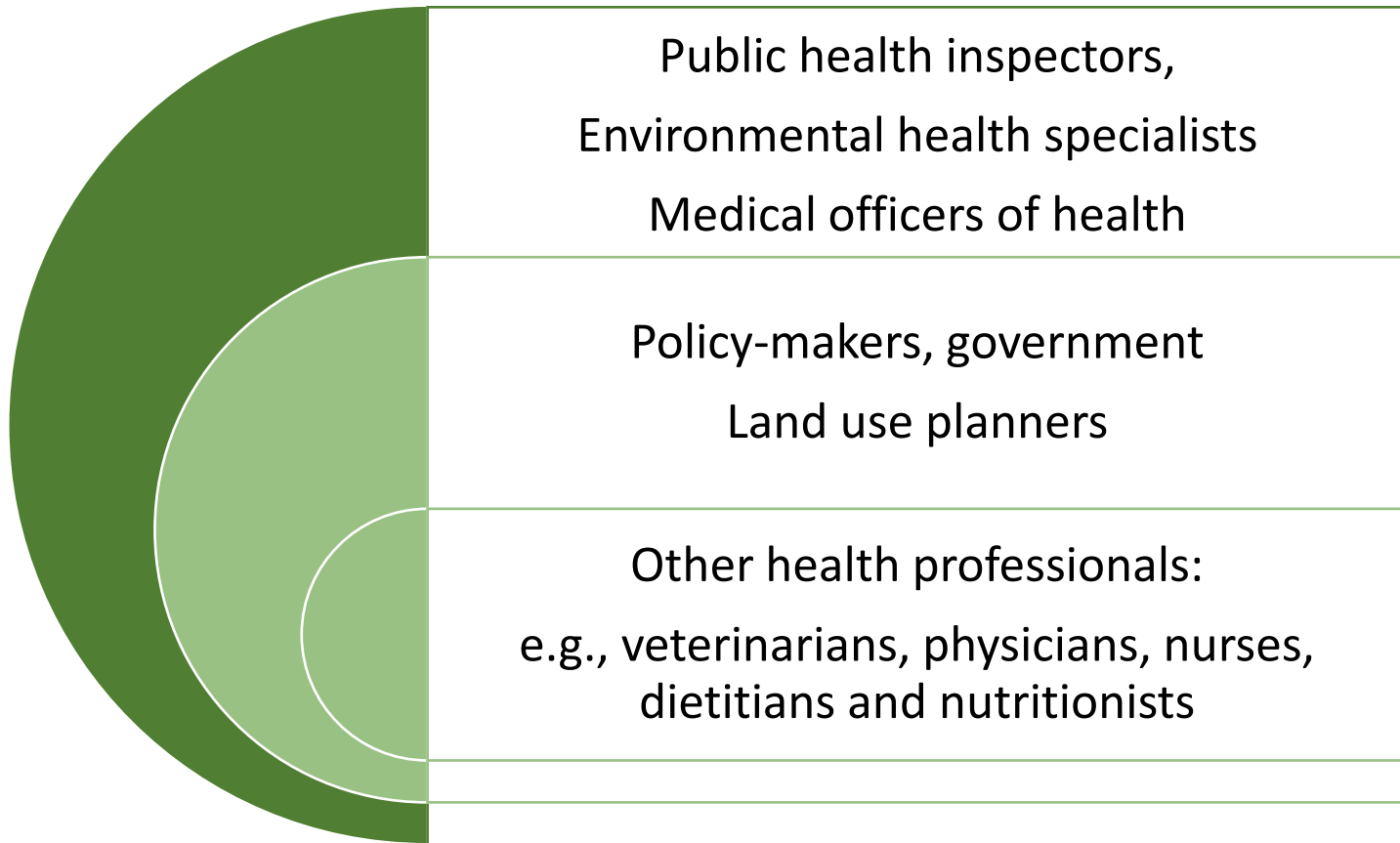
## Identify gaps in knowledge

- Catalyze new research or application of research

## Build capacity

- Provide tools, establish networks, foster partnerships

# Our target audience



# Needs, gaps, and opportunities assessment (2005-13)



2012-2013 Environmental Health Needs and Gaps in Canada - Suggested Document Topics

Area	Topic	Percent of Interviewees Rating Topic as High Importance	Total Number of Interviewees Who Rated the Topic
Health impact assessment	Best practices for health impact assessment, for a range of environmental projects (from simple, e.g., harbourside marine waste disposal, to mega-projects, e.g., mining, hydro power, wind turbines). When and to what level.	81	26
Evaluation	How to evaluate EH programs (including overall impact of program vs. different program, priority setting of various programs), e.g., food safety, personal service establishments (e.g., based on burden of disease)	73	26
Oil & gas	Health impacts of shale gas (hydraulic fracturing) at the local level	42	26
Risk assessment & communication	Guide to risk communication with public and media, including where there is no standard or it is exceeded, e.g., old mine site and uranium in drinking water, mould, electromagnetic frequencies (not radon) (focus on gaps in guidance)	42	26
	Understanding and communicating the health relevance of exceeding environmental standards, e.g., drinking water	40	25
	Guide to human health risk assessment, including validation of predictions (e.g., US ATSDR, CDC, EPA) (consider complex chemical mixtures)	36	25
Food safety	Top sources of food-related risks and how to effectively reduce those (including irradiation, buy local food, small operations)	32	25
Enforcement	Comparison of how jurisdictions enforce regulations, including effectiveness (e.g., ticketing, disclosure), e.g., tobacco control (sales to minors, smoke-free environments)	31	26
Risk assessment & communication	How to apply a consistent approach to risk categories for food premises, public pools, personal service establishments	31	26
Drinking water	Regulation of small semi-public water supplies – What are the most effective elements of a regulatory program	27	26
Health impact assessment	How to assess health impacts of official community plans (e.g., water, septic, physical activity) and provide meaningful input	27	26
Housing	Provincial/territorial approaches to housing and health (best practices, including residential, rental)	27	26
Miscellaneous	Effectiveness of use of social media in EH	23	26



# Strategic Priorities

## Built Environment



## Climate Related Environmental Health



## Emergency Response & Enhancing Public Health Capacities



## Contaminants & Hazards



# Select examples of KT products

## Evidence reviews

MARCH 2018

### GROWING AT HOME: HEALTH AND SAFETY CONCERNS FOR PERSONAL CANNABIS CULTIVATION

**PURPOSE**

Personal cultivation as described by the proposed Cannabis Act (2017) will permit adults to cultivate up to four cannabis plants per household. This provision is intended to both promote equity by facilitating access to legal cannabis, particularly when retail outlets are difficult to access, and to undercut the black market. However, indoor cultivation and processing of cannabis may also introduce or exacerbate certain environmental health risks in the home.

This document identifies health and safety concerns that may be relevant to personal cultivation after legalization – that is, legal home growing and the associated health risks. Although this information may be of relevance to the public at large, the evidence presented here has been synthesized

home, effective communication about these risks, limited means that governments have to abate the

Previous experience with remediating illegal shows that indoor cultivation can be associated number of practices intended to optimize growing high-wattage lights) while preventing that bypassing the electrical meter).<sup>1</sup> Although legalization will eliminate the need for practice the greatest risks, inspection professionals have reported such practices even in legal in Canada, medical home growers are required the relevant building and fire codes, as well and residential tenancy regulations, but a

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### Float Tanks: Review of Current Guidance and Considerations for Public Health Inspectors

Shelley Beaudet\* and Angela Eykelbosch\*



**Key Messages**

- The growing popularity of "floatation" and the ways in which this practice differs from the use of pools and spas have raised interesting questions in environmental public health.
- Public health agencies in the US and Canada have taken very different approaches to this classification

The "float tanks" in which chambers or pods that a dark, quiet environment (i.e., open basins or chambers) or fully self-contained pods, each with its own filtration

National Collaborating Centre for Environmental Health  
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### EQUITY IN ENVIRONMENTAL HEALTH PRACTICE: FINDINGS OF A PILOT STUDY



OCTOBER 2017

### FOOD DESERTS AND FOOD SWAMPS: A PRIMER

**INTRODUCTION**

Our food environments, which include the food that is available to us in our day-to-day environments, is a determinant of what we eat as individuals.

This document is intended for environmental public health professionals, including medical health officers and public health inspectors, as well as other public health professionals such as public health dentists and health promoters, whose work may include healthy built environments or healthy communities. The document introduces food environments such as food deserts and food swamps, discusses the related health implications, provides the rationale for consideration by nonnutrition professionals, and highlights some opportunities for action and collaboration with provincial and municipal governments, as well as business operators. For more information about healthy food environments,

distance travel to access healthy food.<sup>1</sup> Lack of access healthy food in the community impedes people's ability maintain a healthy diet.

In contrast, the more common type of community environment in Canadian urban settings is the food swamp. A **food swamp** is a geographical area with adequate and healthy food retail, but that also features an overabundance of exposure to less healthy food and beverages.<sup>1,2</sup>

Some researchers have identified **food mirages** as a for individuals experiencing low-income to access affordable food in their neighbourhood.<sup>3</sup> For some the local healthy food retail options may be available they are out of reach financially. The effect of a food is the same as a food desert in which residents need a distance away from home in order to obtain a

AUGUST 2017

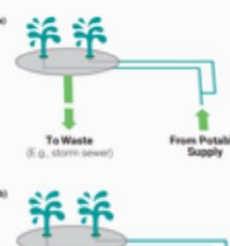
### IDENTIFYING AND ADDRESSING THE PUBLIC HEALTH RISKS OF SPLASH PARKS

**KEY MESSAGES**

- Recirculating splash parks have caused several large gastrointestinal outbreaks in recent years.
- Outbreaks are typically linked to failure of the chlorination/ filtration systems and/or lack of secondary disinfection, such as ultraviolet light, but may also derive from user behaviour as well as design and operating conditions.
- This document reviews the literature to identify design, hygiene, and operational best practices that are thought to reduce the risk of critical disinfection failures.

**Introduction**

Splash parks, also known as splash pads, spray parks, or wet decks, have gained in popularity over the last decade. These interactive parks are artificially created depressions or basins into which water is sprayed, splashed or poured onto visitors; water is not permitted to accumulate, but instead drains immediately out of the play area.<sup>1,2</sup> Splash parks may take one of two basic designs, which influences the associated



MARCH 2015


### Review of Field Tests on Bed Bug Control Technologies

Taz Sharif

**Key Messages**

- There are numerous bed bug control technologies but few published studies that evaluate or demonstrate effectiveness in the field.
- Education and cooperation between affected residents, landlords, and pest control professionals are important for successful long-term bed bug management strategies.
- There are a limited number of insecticides available, so

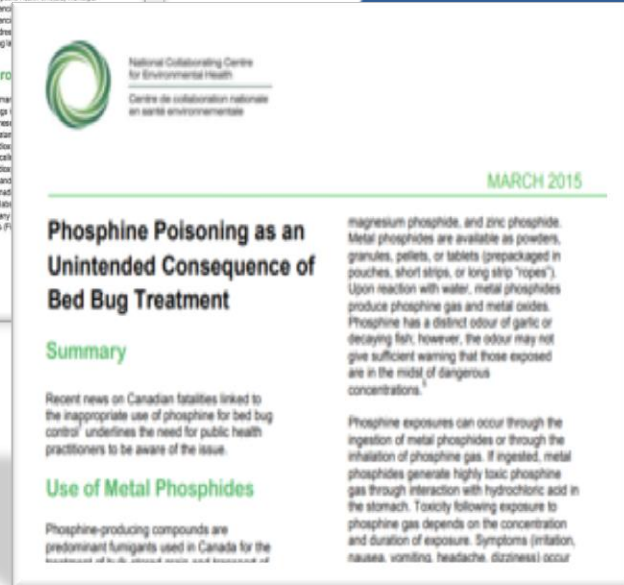
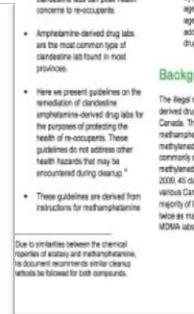
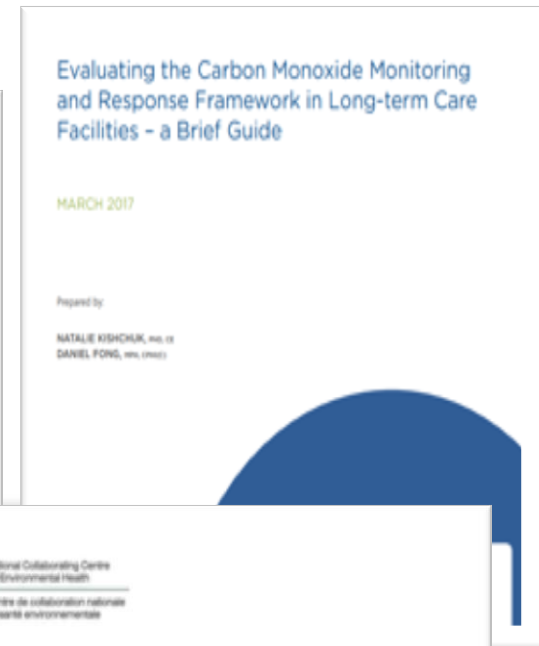
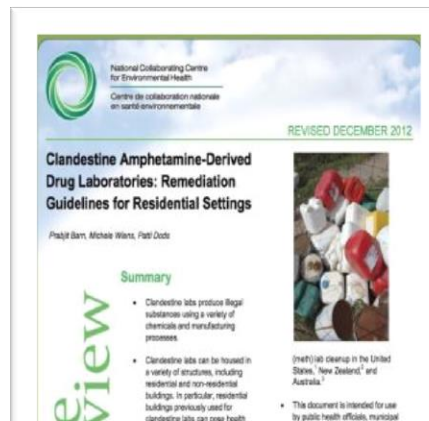
The last effective residual products (e.g., chlorpyrifos, propoxur) were removed from indoor use in 1999 and, since that time, bed bug populations resurged to epidemic levels across the world. This document reviews the bed bug control technologies that have been evaluated in the field from 2005 to 2014 and will





# Select examples of KT products

## Guidance documents



# Select examples of KT products

## Field Inquiries



Infection Control for Tebori Tattooing



### Meat-packing Pads as Tattoo Dressings

**Primary inquiry:** Is there evidence for or against the use of clean vs. sterile dressings in the care of tattoos?

**Disclaimer:** The information provided here is for the purpose of addressing a specific inquiry related to an environmental health issue. This is not a comprehensive evidence review and has not been subjected to peer review. The information offered here does not supersede federal, provincial or local guidance or regulations, and/or the advice of a medical professional (where applicable).

### Background

During a recent convention on body modification and tattoos in Vancouver, BC, an environmental health officer noticed that tattoo



NCCEH approached the question using the following multi-pronged



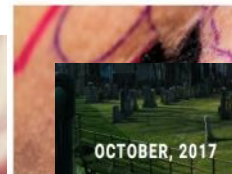
### Irrigating food crops with water containing cyanobacteria blooms

**Primary inquiry:** Small horticulture growers have been watering their crops with surface water containing a cyanobacterial bloom, before selling their crops at local markets.

a) Can irrigation of food crops using surface water affected by cyanobacteria blooms result in bioaccumulation of cyanotoxins in these crops?

b) Can cyanotoxins bioaccumulate to a concentration that might cause a public health concern?

**Please note:** The information provided here is for the purpose of addressing a specific inquiry and is not subjected to external review. The information offered does not supersede federal,



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### Cemetery setback distances to prevent surface water contamination

**Primary inquiry:** In Canada, as in many other countries, cemeteries are required to be setback a certain distance from waterbodies to protect drinking water sources from contaminated liquids that can arise from the decomposition of bodies after burial. What is recommended as a safe setback distance? What is the rationale for the setback distances used throughout Canada?

**Please note:** The information provided here is for the purpose of addressing a specific inquiry and is not subjected to external review. The information offered does not supersede federal, provincial, or local guidance or regulations.

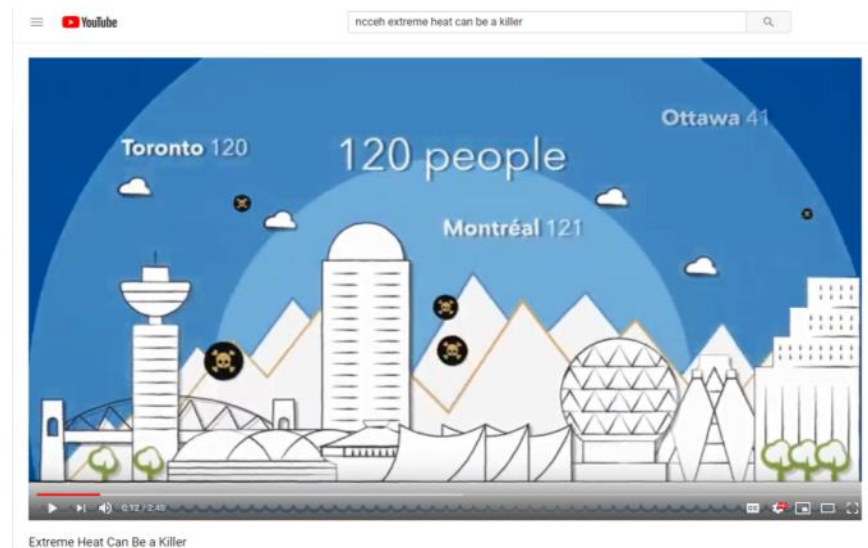


# Select examples of KT products

## Topic pages

- *Indigenous disaster response*
- *Floods: Prevention, preparedness, response and recovery*
- *Pesticide exposure in the urban environment*
- *Neonicotinoid pesticides*
- *Cannabis resources for environmental health practitioners*
- *Health equity and environmental public health practice*

## Whiteboard animated videos



*Extreme heat can be a killer*

[https://www.youtube.com/watch?v=RBwgS\\_1D5FM](https://www.youtube.com/watch?v=RBwgS_1D5FM)



# Select examples of KT products

## Blogs



### Blog



#### Cannabis legalization: what can public health do?

Leela Steiner, 2018-10-17

Cannabis, Indoor Air

Given the complexities of the Cannabis Act (2017), public health communities will face a series of...



#### Cultivation, Consumption, and Complexity - Cannabis...

Leela Steiner, 2018-10-17

Cannabis, Indoor Air

October 17th is an historic day in Canada. This moment offers public health professionals an...



#### August Newsletter Released: Wildfires

NCCEH, 2018-09-12

The August 2018 newsletter introduces many new resources related to Wildfire Smoke and Disaster...



#### Personal Service or Medical Procedure?

Shirra Freeman, 2018-09-12

A growing number of personal services present challenges to environmental health practitioners...



#### Dragon's Breath – Take precautions when using liquid...

Tina Chen, 2018-09-12

A novel food trend has been popping up in shopping malls, carnivals, fairs, and restaurants, using...



#### The Detection of Oxycodone in Mussels Collected in...

Brandon Yau, BCCDC and Reza Afshari, BCCDC, 2018-08-22

The Washington State Department of Fish and Wildlife in collaboration with The Centre for Urban...



#### A searchable tool for finding policies on environmental agents, cancer and chronic diseases

Have you ever needed to do a quick policy scan for an environmental health issue or wanted up-to-date information to write a policy brief?

Anne-Marie Nicol, 2018-07-19



#### Green space can reduce ADHD symptoms in children

Access to green space improves the mental well-being of children and helps with behavior and symptoms of ADHD.

Helen Ward, 2018-06-05



#### March 2018 NCCEH Research Scan

Each month, our resident super Librarian casts her expert eye across hundreds of journals, news portals, newsletters, and websites to find all the best research articles and grey literature related to

NCCEH, 2018-05-17

# Knowledge mobilization and exchange

- Training
  - Online courses
  - Seminar Series
  - EH practicum students
  - Medical students/residents
- Conference presentations
  - CIPHI conferences
  - CPHA
  - Invited talks
- Social media



## Monthly eNews



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### New Wildfire Smoke Topic Page

The frequency and intensity of Canadian wildfires is increasing as a consequence of the changing global climate, as well as long-standing forest management practices. The NCCEH has assembled a collection of resources intended to assist public health practitioners, decision-makers, and the public with guidance regarding public health impacts, community preparedness, risk communication and response to wildfires and wildfire smoke.

[Read more](#)



### Public Health Responses to Wildfire Smoke Events

This document is a first-of-its-kind report on wildfire smoke events and public health response in Canada and provides some insight into where future inquiry and capacity development might be warranted. The public health response to wildfire smoke events is complex, involving inter-sectoral collaboration, community engagement and the use of many sources of information in decision-making. This aim of this document is to understand the perceptions, challenges and needs of public health practitioners in Canada when responding to wildfire smoke events.

### Indigenous Disaster Response Topic Page

First Nations communities can be disproportionately impacted by floods, wildfires, crude oil spills and other disasters. Key factors, including: logistical difficulties, variability in local administrative and technical capacity, lack of trust, deep reliance on local ecosystems, and the existence of profound social and health inequities can all contribute to this disproportionate impact. We created this topic page to provide environmental health professionals, and the Indigenous communities they support, with resources designed to enhance emergency

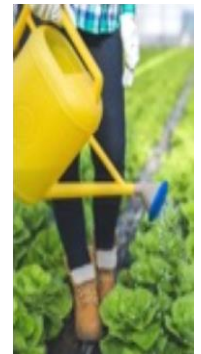


# Successful EHO Secondments at NCCEH

- 2016** Vancouver Coastal Health: **Shelley Beaudet**
- Float Tanks: Review of Current Guidance and Considerations for Public Health Inspectors
  - Float Tanks: Considerations for Environmental Public Health



- 2017** Interior Health: **Chris Russell**
- Identifying and Addressing the Public Health Risks of Splash Parks
  - Food crops irrigated with cyanobacteria-contaminated water: An emerging public health issue in Canada
  - Co-facilitated two NCCEH eJournal Club sessions
  - CIPIH National AEC presentation

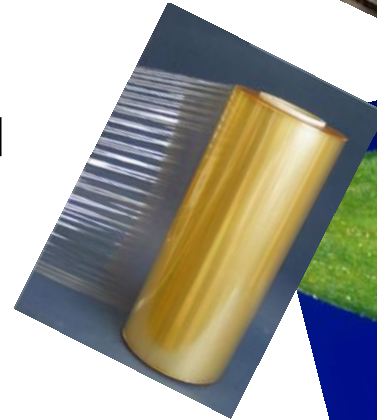


- 2018** First Nations Health Authority: **Casey Neathway**
- Radon in First Nations communities
  - Healthy housing for First Nations
  - Traditional/country foods and climate change/resource development



# New KT products coming soon ...

- Cannabis and EH issues: Fact Sheet
- Healthy Build Environment Forum
- Plastics (food contact materials) and microplastics
- Ethnic foods and food safety issues
- Lead in school drinking water sampling protocols
  - *Comparison of six agencies in Canada & US*
- Whiteboard animated video: ticks and environmental control



# Evidence-informed decision-making (EIDM)

- EIDM is “the intentional and **systematic** processes of bringing the **best available scientific evidence** on specific questions together with **other relevant information** to help weigh options and **inform decisions** that will affect priorities, policies, programs and practices” (Pierson et al. 2012).
- How to have EIDM in public health?
  - Effective **knowledge translation, synthesis, and exchange (KTSE)**

# **Knowledge translation has been described as....**

- Activities that foster dissemination, adoption, and appropriation of the most up-to-date knowledge possible to allow for its use in professional practice (INSPQ, 2013)
- Systematic review, assessment, identification, aggregation, and practical application of research by key stakeholders (NCDDR, 2005)
- A dynamic and iterative process that includes synthesis, dissemination, exchange and ethically sound application of knowledge to improve the health of Canadians, provide more effective health services and products and strengthen the health care system (CIHR, 2017)

# What kind of knowledge does KTSE capture?

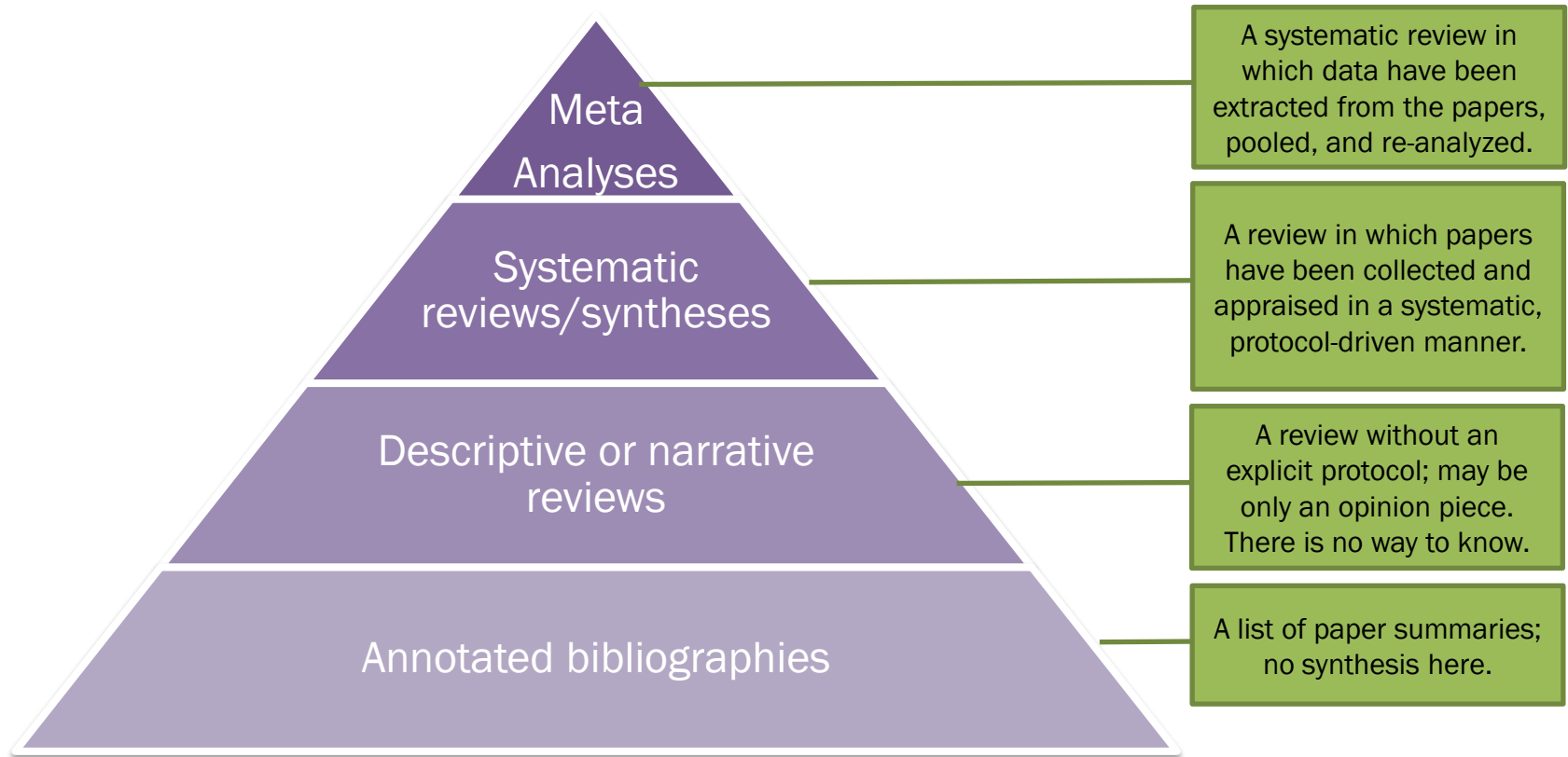
- Public Health Knowledge (INSPQ, 2013)
  - Research-based
    - Fundamental/experimental, clinical, or applied
    - Products include: reports, peer-reviewed publications, lit reviews, systematic reviews, meta-analyses
  - Tacit knowledge
    - Know-how of practitioners, researchers, etc. who accumulated knowledge about theoretical knowledge and practical experience
  - Knowledge from data analysis
    - Collected, organized, analyzed and transmitted to stakeholders



# **KTSE may also be known as:**

- Knowledge Transfer (commonly used outside of healthcare)
  - Systematic approach to capture, collect, and share tacit knowledge in order for it to become explicit knowledge
  - Process of getting knowledge used by stakeholders
  - All forms of ‘knowing’ including research, tacit/experiential knowledge
- Knowledge Exchange
- Research utilization
- Implementation
- Many more... often used interchangeably, but can mean different things

# Many types of lit review for different purposes



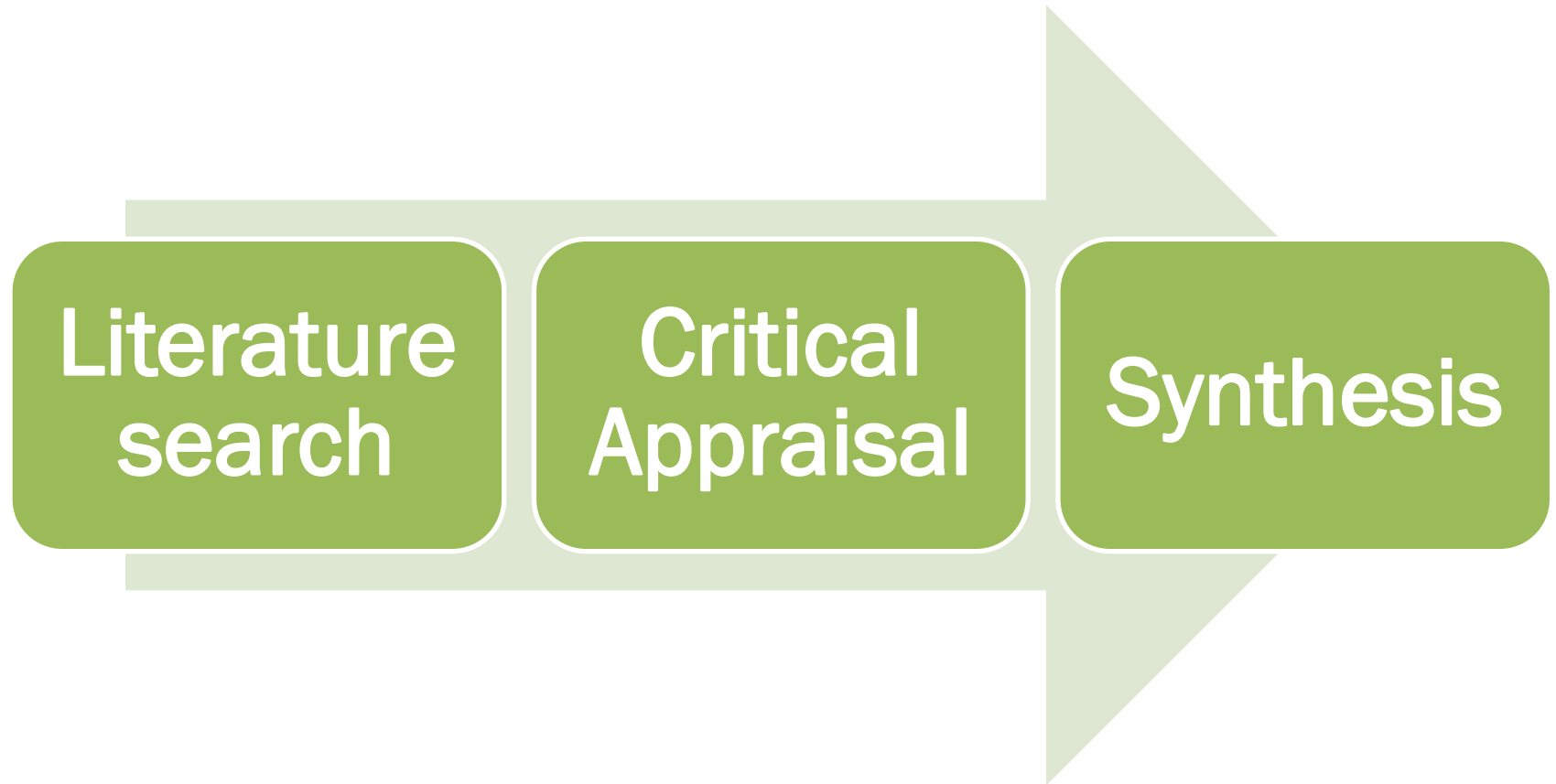
Knowledge synthesis happens in the three upper levels



# **STEP BY STEP: LITERATURE REVIEWS**

# What does a literature review involve?

Generally...



## **Case example: An inquiry....**



An EHO visiting a body art convention noticed that tattoo artists were using meat-packing pads as dressings for new tattoos. The pads are food safe and bacteriostatic, but not sterile. They don't seem to be causing infections. Is it acceptable to let this practice continue?



# LITERATURE SEARCH

1. Develop a research question
2. Identify your key words
3. Identify your databases
4. Construct your search query
5. Document your search results
6. Identify the relevant papers
7. Repeat your searches to update



# BE CAREFUL!



- Before beginning, take a moment to identify any previously held assumptions regarding the topic.
  - **Bias** in how you shape your question, where you look for information, or what papers you include can invalidate your work.
- Using pre-specified (“*a priori*”) **inclusion and exclusion criteria** adds transparency and rigour to selection of information sources.
- E.g. Include English articles written after 2000; exclude newspaper articles.

# Bias in a literature search

- **Publication bias:**
  - Studies with “positive” results more likely to get published.
  - Helpful to question what types of information might **not** be represented in the literature.
- **Database bias:**
  - Relying on a single database can systematically limit what you find for certain topic areas.
- **Source selection bias:**
  - Not just relying on databases, but also grey literature, theses, etc.
- **Paper selection bias:**
  - Stick to inclusion/exclusion criteria; have more than one reviewer, if possible.



## **Step 1: Develop A Research Question**

- Purpose of this is to focus your thinking and your lit search.
- The question should follow the principles of PICOS – population, Intervention (or Exposure), Comparison, Outcome, Setting

**Is the use of meat packing pads for tattoo dressing associated with more infections than from sterile dressings?**

- A specific question, easy to pick out key words.
- Helps to develop inclusion/exclusion criteria.



## Step 2: Identify Your Key Words

- Brainstorm a list of keywords, including acronyms → *Bandages, dressings, sterile, non-sterile, clean, tattoos, infection.*
- Think of your “**lens**” → keywords from other disciplines, countries, languages, etc.
  - Also called permanent ink; includes permanent makeup.
  - Conventional tattooing vs. traditional tattooing





## **Step 2: Identify Your Key Words**

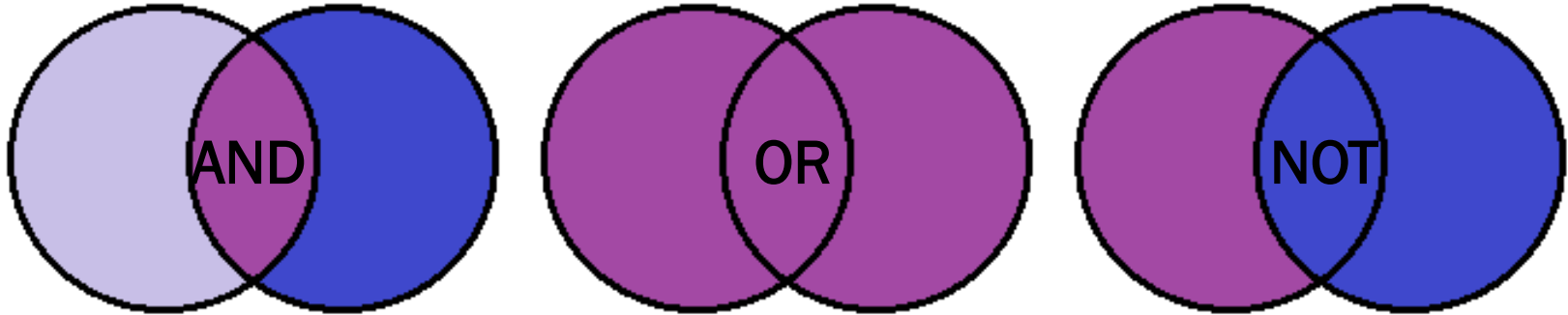
- **More advanced: selecting MeSH terms**
- **Set your selection criteria. In this example:**
  - Papers about tattoo wounds or similar wounds
  - Papers in which sterile or non-sterile dressings were used intentionally (not accidental contamination)
  - English language only
  - Peer-reviewed, but also grey literature
  - Nothing related to traditional tattooing (different technology)



## **Step 3: Identifying Your Databases**

- Google Scholar and PubMed are good places to start, but make sure you also search on other databases. Many great field-specific resources out there!
  - Relying on one database can be a source of bias
  - Libraries provide access to other databases (EBSCOhost, etc.)

## Step 4: Construct Your Search Query



- Boolean operators: AND, OR, NOT, used with (), “”
- Variants:
  - Truncation (\*): will add any ending to the root of the word
    - metabol\* → metabolizing, metabolism, metabolic, metabolite
  - Wildcard (?): will return different spellings of the word with zero or 1 characters
    - isch?emic → ischemic, ischaemic
- Limiters: time, language, peer-reviewed, paper types, etc.

# Step 5: Document Your Search Results

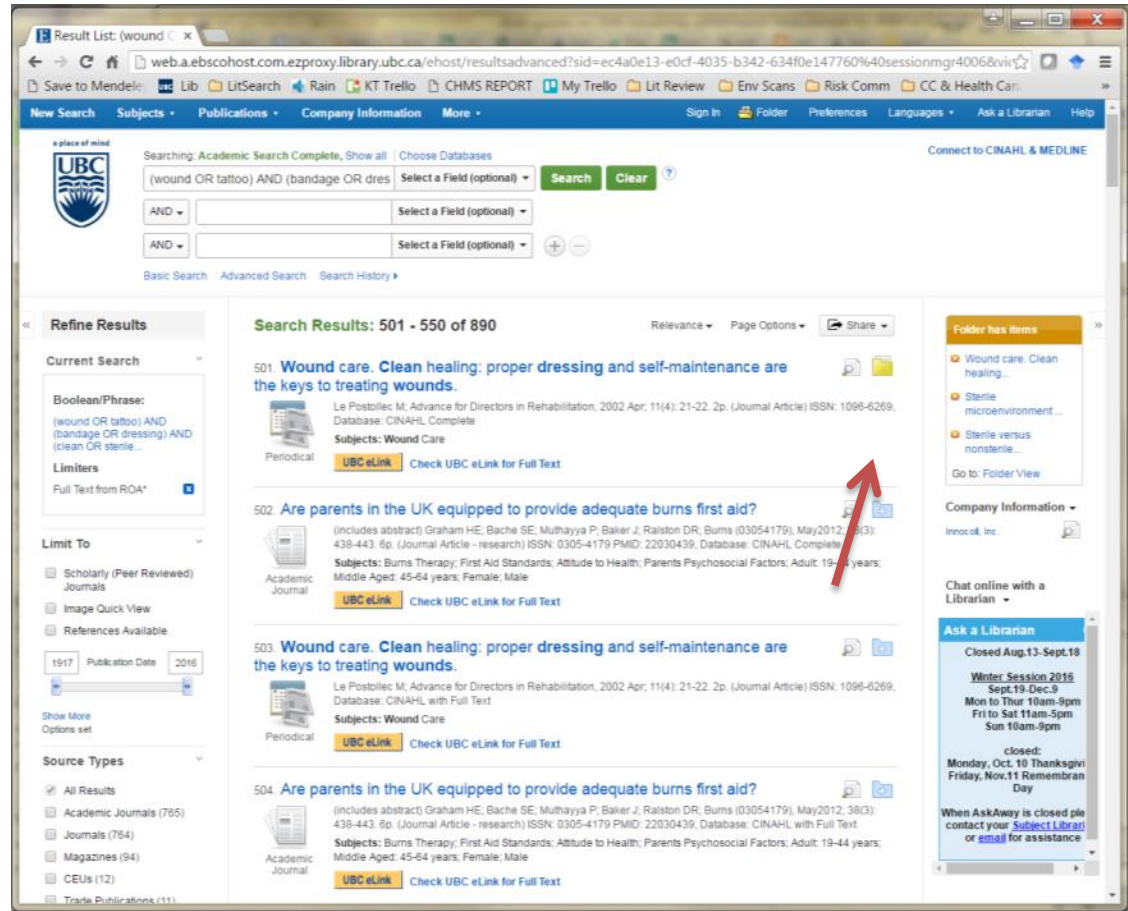
- Keep track of what, where, and when you searched:

Date	Database	Key words	Hits
8/22/2016	EbscoHost #1	("post-surgical care" OR "home care") AND (wound OR incision) AND ("sanitary napkins" OR "sanitary pads" OR "maxi-pad" OR "diaper")	0 hits
8/22/2016	EbscoHost #2	(wound OR tattoo) AND (bandage OR dressing) AND (clean OR sterile OR non?sterile)	34 hits
8/23/2016	EbscoHost#3	"tattoos" AND "skin infection"	6,000 hits (Too many hits to review, revise search terms.)
9/1/2016	Google Scholar #1	("post-surgical care" OR "home care") AND (wound OR incision) AND ("sanitary napkins" OR "sanitary pads" OR "maxi-pad" OR "diaper")	1 hit
9/1/2016	Google Scholar #2	(wound OR tattoo) AND (bandage OR dressing) AND (clean OR sterile OR non?sterile)	5 hits
9/1/2016	CINAHL#1	("post-surgical care" OR "home care") AND (wound OR incision) AND ("sanitary napkins" OR "sanitary pads" OR "maxi-pad" OR "diaper")	0 hits

- Very helpful when you need to repeat searches

# Step 5: Document Your Search Results

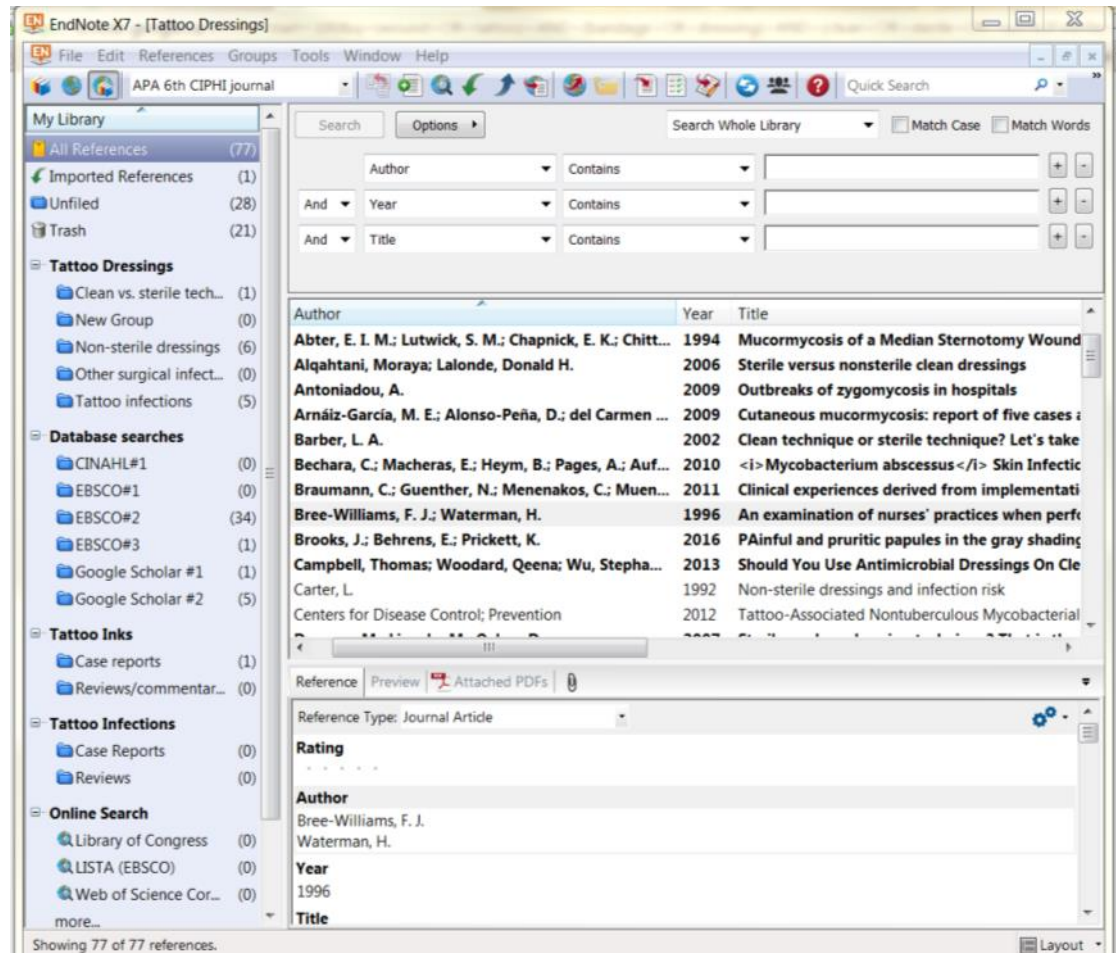
- As you run your searches, you need to keep track of the citations of all relevant papers.
- If the title and/abstract looks promising, export the citation to **reference management software**.
- Many database search tools have a selection feature that will allow you to collect and export a batch of papers.





# Step 5: Document Your Search Results

- Reference management software is an **essential tool**.
- Records meta-data for all your papers.
- Use **folders** to:
  - Archive your search results
  - Organize papers by topic
- Makes writing easier:
  - Cite as you write
  - Quick bibliography
  - Quick re-formatting



# Step 5: Document Your Search Results

- Many **FREE** reference management tools available:

Ref Management Software	Features
Zotero <a href="http://www.zotero.org">www.zotero.org</a>	<ul style="list-style-type: none"><li>Allows you to import/save citations off Google Scholar and most scientific publication platforms.</li></ul>
Mendeley <a href="http://www.mendeley.com">www.mendeley.com</a>	<ul style="list-style-type: none"><li>Great for organizing, tagging, and making notes on papers.</li><li>Has desktop and web-based library.</li><li>Facilitates info sharing with other users.</li></ul>
Google Scholar Library <a href="https://scholar.google.ca/">https://scholar.google.ca/</a>	<ul style="list-style-type: none"><li>Simplest tool; easy to use, but very limited functionality for a complex search/research question.</li><li>Saves references directly out of a Google Scholar Search (just click the “Save” button)</li><li>Can export to other programs, if necessary.</li><li>Allows tagging, but can’t sort into folders.</li></ul>

## Step 6: Identify the Relevant Papers

- Your search may return 100s of documents
  - Which ones are useful?
- Typically takes two rounds of review:
  - **First Round**: Select papers and import to reference manager based on **title** and then **abstracts** of relevant titles
  - **Second Round**: Read the selected papers and eliminate those which do not fit your **selection criteria**
- As you read, watch out for **additional citations** that may not have appeared in your search

## Step 7: Repeat Your Searches

- During and after review, run your searches again periodically until submission for publication
  - Newest publications may have relevant info
  - Note the date range your search encompasses
- Can also use email alerts using your best keywords
  - Google Alerts → good for non-academic content
  - Google Scholar → keyword alerts for academic content
  - Web of Knowledge → citations alerts
  - Many of the publishers have alerts

# Common Lit Search Problems

**My search returned too many papers to review.**

- You may be asking too large of a question.
- Refine or limit your research question.

**Nothing relates directly to my research question.**

- Can anything useful be learned from related fields? Try expanding your search.
- Is there any grey literature from public health agencies or other reputable entities?

**I can't access the paper online.**

- Those with library access may be able to order the article through an interlibrary loan.
- No library access? Find partners with access.
- Be very careful of relying on Abstracts alone.

**The problem is more complex than expected.**

- Reach out to the EH community, including other EH practitioners, government agencies, academics, and the NCCEH ([contact@ncceh.ca](mailto:contact@ncceh.ca))



# CRITICAL APPRAISAL

- Academics and practitioners alike are often asked to appraise evidence for subjects in which they are *not* experts.
- This can be challenging (and intimidating), but remember...
  - The process is **iterative**: the more you read, the more you understand, and your understanding of earlier papers in the review will improve.
  - There are a set of **basic questions** you should ask when reading any (and every paper).

# **Steps to Conducting Critical Appraisal**

Step 1: Start at the top

Step 2: Ask the basic questions

Step 3: Set up your lit review matrix

# **CRITICAL APPRAISAL**

## **Step 1: Start at the top**

- Rather than going directly to primary studies, start with other systematic or semi-systematic reviews
- These resources should have already been appraised, so they are (more) trustworthy
- At the very least, you know if yet another review is warranted

## Step 2: Ask the Basic Questions

- For each *individual* study, you should glean the following:
  - What questions does the paper address?
  - What are the main conclusions of the paper?
  - What evidence supports those conclusions?
  - Are the methods appropriate for answering the question?
  - Do the data actually support the conclusions?
  - What is the quality of the evidence?
  - Why are the conclusions important?

## **Step 3: Set up your lit review matrix**

- The literature review matrix is a highly useful research tool:
  - Each paper gets a row
  - Each column is an important point of comparison amongst all the papers
  - When the matrix is complete, writing the paper and successfully synthesizing are much easier
- Benefits: organization, accountability, easy to find the gaps, focused RQs; facilitates group work
- During review, scan the references and add any additional relevant papers to the matrix
- For more info: see Klopper 2007, Garrard 2007

# Example of a Literature Review Matrix

Study	Setting	Type of wound	Dressings Used	Outcomes
Lawson et al.	Hospital	Contaminated surgical incision	Sterile and non-sterile dressing changes 3 times a day.	No difference in infection rates.
Stott et al.	Hospital	Contaminated surgical incision	Sterile and non-sterile dressing changes 3 times a day.	No difference in wound healing
Karch & Karch	Homecare	Clean surgical incision	Sanitary pads, w/instruction on clean technique	Serious infection

- Other important points of comparison (columns) may be:
  - Study type, # participants (n), population characteristics, quality rating, comments/criticisms, or any other category important to your research question



# How do I know if it's a “good” paper?

- Appraising the quality of a paper:
  - Apply inclusion/exclusion criteria
  - Many approaches to assessing evidence (e.g., CASP)
  - Consider study design, possible bias, assumptions, plausibility, etc.
- Online resources:
  - NCCEH and NCCMT documents on critical appraisal
  - “How to Read a Paper” series by Trish Greenhalgh
  - Talk about what you mean by “quality” research with your research group or mentor
  - Look for obvious conflicts of interest

# SYNTHESIS

- Synthesis means the generation or creation of **new knowledge**.
- Summarizing is not synthesizing.
- Your lit review matrix is a **powerful tool** for synthesis.



# How do I know that “synthesis” has occurred?

- You have identified and drawn on **relationships** between studies
- You have identified **themes** that stand out from the body of literature
- You have understood the **state of knowledge** within the context of **strengths and limitations**
- You have identified **gaps** in the body of literature
- You have connected your work to **current issues**
- You can suggest further **research** or **policy action**

# Key Messages

- Literature reviews are just one tool within KTSE
- A good synthesis can only come from a good lit search
- The quality is partly dependent on how well you can avoid bias during the process
- Using a literature review matrix (or synthesis matrix) can help clarify appraisal and facilitate synthesis
- True synthesis has occurred when new knowledge or insight on a topic/question has been generated
- A comprehensive synthesis will include public health knowledge from multiple lines of evidence

# Ron de Burger Student Award

- Annual award offered in partnership with the Environmental Health Foundation of Canada (EHFC) for students in a Public Health Inspection (PHI) program or a Master's level public health program
- Intended for students to develop awareness and promote critical analysis of environmental health issues
- Up to five (5) awards are made available annually (\$500)
- Winners are also given the opportunity to present to public health practitioners across Canada and write a blog post on the topic chosen



# Ron de Burger Student Award

- 2018-19 criteria have changed
- Pre-determined environmental health practice-related scenarios
- Students will provide an evidence-based response based on practice and/or policy implications
- Detailed criteria are forthcoming





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# More Resources

*Canadian Institutes of Health Research. A Guide to Knowledge Synthesis. Available at:*

<http://www.cihr-irsc.gc.ca/e/41382.html>

*Harvard Graduate School of Education. The Literature Review: a Research Journey. Available at:*

<http://guides.library.harvard.edu/c.php?g=310271&p=2071512>

*National Collaborating Centre for Methods and Tools:*

<http://www.nccmt.ca/>

*Virginia Commonwealth University. Write a Literature Review. Available at:*

<http://guides.library.vcu.edu/lit-review>



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