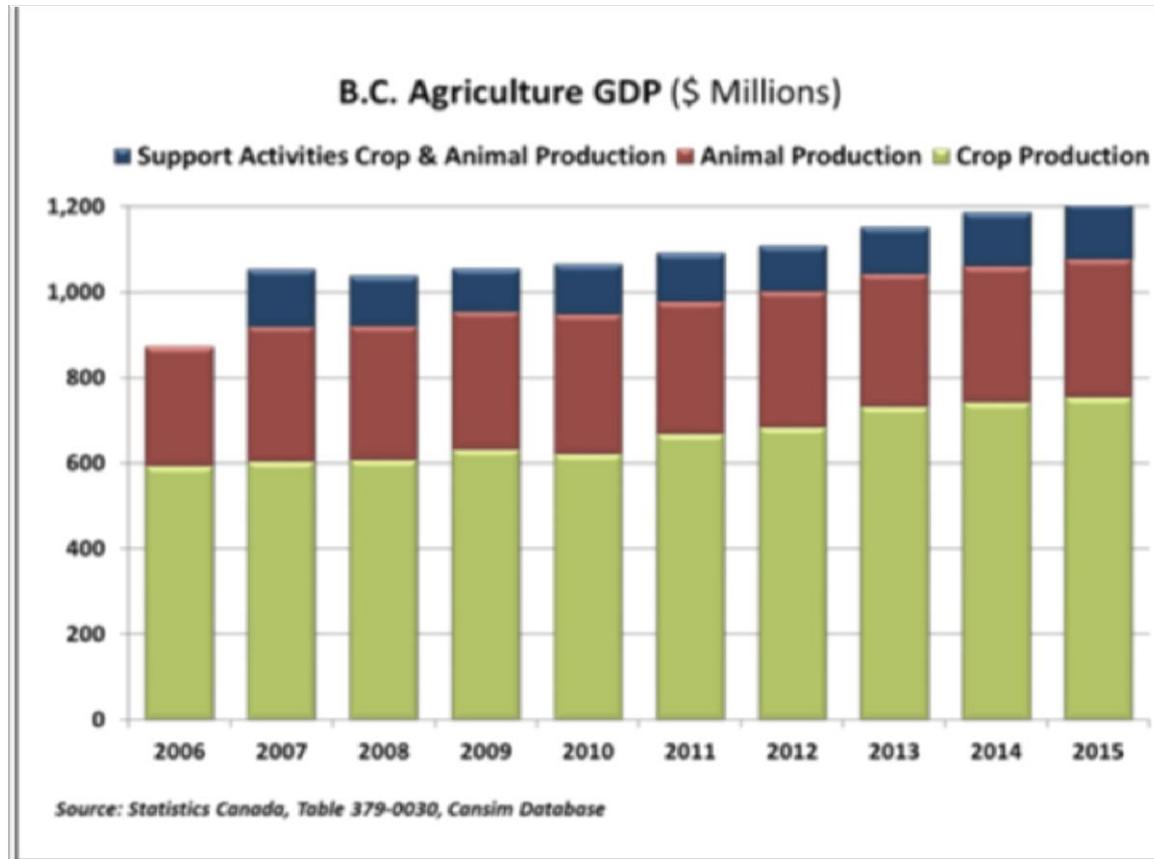




Immigrant and Foreign Worker Lung Health in Occupational Settings: The Wash with Care project

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No Conflict of interest



Agricultural sector in BC



Majority of BC farms still family owned





Changing faces of BC farming- increasing number of farm operators originated from India, particularly the Punjab region.

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2011 CENSUS OF AGRICULTURE: *British Columbia Highlights*



The 2011 Census of Agriculture was released May 10, 2012 by Statistics Canada at the census region, provincial and national levels. The previous census was conducted in 2006.

Key Facts **2011 CENSUS:**

| | |
|----------------------------------|--------------|
| TOTAL CENSUS FARMS | 19,759 |
| TOTAL GROSS FARM RECEIPTS ('000) | \$2,935,906 |
| AREA OF CENSUS FARMS (Hectares) | 2,611,383 |
| SHARE OF TOTAL LAND AREA IN B.C. | 2.9% |
| AVERAGE AGE OF FARM OPERATORS | 55.7 |
| TOTAL FARM CAPITAL ('000) | \$34,701,683 |

Farm workers in BC

- In 2000, estimated 6000 Punjabi-speaker farmworker (Runsten 2000)
 - Most spoke Punjabi (BC Public Service 2003)
 - Mostly female (Otero 2010)
 - Often older workers
 - Much higher proportion of **farm family members** employed (Stats Can)
- The Seasons Farmworker Program (SWAP) began in 2004 (Formal government program)
 - Mostly male and from Mexico
 - From 47 in 2004 to over 3000 in 2010

Table 3: The top 20 pesticide active ingredients sold by quantity in B.C. in 2010

| Active ingredient | Pesticide type | Primary sector(s) of use | Quantity sold in 2010 (kg) | Quantity sold in 2003 (kg) | % change since 2003 |
|---|-----------------------|--|-----------------------------------|-----------------------------------|----------------------------|
| Insecticidal mineral oil | Insecticide | Agriculture | 304,436 | 317,108 | -4% |
| Glyphosate | Herbicide | Agriculture, industrial vegetation, forestry | 260,326 | 126,269 | +106% |
| Sulphur | Fungicide | Agriculture | 91,580 | 73,408 | +25% |
| Chlorothalonil | Fungicide | Agriculture, turf management | 50,768 | 33,505 | +52% |
| Herbicidal mineral oil (i.e. mineral spirits) | Herbicide | Agriculture | 40,180 | 23,575 | +70% |
| Lime sulphur | Fungicide | Agriculture | 31,111 | 20,524 | +52% |
| Diazinon | Insecticide | Agriculture | 28,518 | 27,074 | +5% |

Health effects from these primary exposures include lung diseases, cancer, difficulty breathing, irritation, cough, shortness of breath

Intercultural understanding of pesticides posed a challenge

Pesticide Health Effects

Evidence from Canada and the US

- Farm Children
 - cancer risks associated with a range of pesticides (organochlorine, chlorophenoxy)
 - Lymphoma (SIR 2.18 1.06-4.19)(Flower 2004)
 - Leukemia (OR 2.44 1.53-3.89) (Wigle 2009, Van Maele 2010)- *maternal exposure only*
 - Neurodevelopmental delay (Eskanazi 2006)
- Farm Women
 - Children with birth defects (OR=4.9 1.63-15.27) (Weselak 2008)
 - Atopic asthma (OR 1.46 1.14-1.87) (Hoppin 2007)
 - Lymphatic cancers (1.62 1.16-2.25) (Godon 1989)
- Studies *rarely* pesticide specific, exposure assessment challenges...

Para-occupational exposure

- Direct exposure via drift and “unpaid farm work” such as mixing and applying
 - 30% of farm children reporting work ~ 3 hrs/day on farm (Lachowski 2009)
- Evidence: Urine analysis shows 3-4x levels of 2,4D, MCPA, chlorpyrifos during application days (Alexander 2006, Arbuckle 2004, Corando, 2006)
- DNA damage higher in on-site farm families than pickers (Nicol 2003)
- Results vary by crop
 - i.e. apples and pears higher (Corando 2006)
 - likely correlates with application method (blast spraying) (Fenske, Liu et al. 2001)



Indirect Pesticide exposure for families

- “Take-home” exposures (Rao 2006, Curl 2002, Lu 2000, Thompson 2003)
 - work clothing and boots
 - toys/pica
 - vehicles and trucks
- Storage in carpets can be considerable (Coranado 2010)
 - pets
 - household dust



Contaminated Laundry

- Pesticides, adjuvants and additives can persist in fabric and washing machines (Easly, Laughlin 1981-2)
- Ontario study
 - highest levels of contamination in homes found on washing machine knobs (Arbuckle 2006)
 - 94% of farm clothing washed in home- (Gladen 1998)
- BC study
 - 15% of separated contaminated clothing from other laundry (Nicol 2003).
 - **BC Government laundry guidelines not well known by women**
 - Information given to men during pesticide certification training session
 - Sessions not mandatory for farmers who spray own fields



Women primarily responsible for laundering work clothing. Often incorporated into general laundry



Homes very close to fields

Identified Knowledge Gap

- Few resources available in Punjabi for women living on farms
- Challenges
 - How to talk about pesticides in a non-threatening manner?
 - Peter Sandman -> Minimize outrage, alerting rather than alarming
 - How to engage women in a “man’s work” issue
 - Community Engagement Model (Murphy 2003)- use culturally appropriate concepts and codes to increase likelihood that messages will be acceptable to the target audience



“Wash with Care”

- Participatory research based project
- Communicate safe handling of pesticide contaminated clothing
 - Laundry as a “stepping stone” concept
- **Phase 1: qualitative interviews**
 - Results- try Bollywood-style approach for video and TV

LAUNDRY INSTRUCTIONS

Launder all your clothing after each day of applying pesticides.
Wash protective clothing after each use.
Wash them separately from the rest of the laundry.

If clothing has become soaked with a pesticide spill, discard it.
It is nearly impossible to remove all pesticide residue from
such clothing, even after several washings.

When washing contaminated clothing, remember:

- **Do not touch contaminated clothing with bare hands.
Use rubber or chemical resistant gloves.**
 - **Pre-rinse clothing using the pre-soak cycle.**
 - **Use HOT water (140°F/60°C).**
 - **Use the highest water level.**
 - **Use the longest wash cycle.**
 - **Use a heavy-duty detergent.**
 - **If clothes are heavily contaminated, run two complete cycles.**
 - **Hang the clothes outside to dry in the sunlight if possible.**
 - **Clean the washing machine by running a full cycle with
detergent and no clothes to remove any pesticide residue.**
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ਧਿਆਨ ਨਾਲ ਧੋਵੋ

ਕੰਮ ਦੇ ਕੱਪੜੇ ਹਰ ਵਾਰ ਵਰਤਣ ਤੋਂ ਬਾਅਦ ਧੋਵੋ।
ਕੰਮ ਦੇ ਕੱਪੜੇ ਆਮ ਕੱਪੜਿਆਂ ਤੋਂ ਅਲੱਗ ਧੋਵੋ।
ਕੀਟਨਾਸ਼ਕ ਦਵਾਈਆਂ ਨਾਲ ਲਿੱਬੜੇ ਕੱਪੜੇ ਸੁੱਟ ਦਿਉ।

- ਹਮੇਸ਼ਾਂ ਦਸਤਾਨੇ ਵਰਤੋ।
- ਕੱਪੜੇ ਪਾਣੀ ਵਿੱਚ ਡੁਬੋ ਕੇ ਰੱਖੋ।
- ਗਰਮ ਪਾਣੀ ਵਰਤੋ (140 ਡਿਗਰੀ ਫਾਰਨਹੀਟ ਜਾਂ 60 ਡਿਗਰੀ ਸੈਂਟੀਗਰੇਡ)
- ਵੱਧ ਪਾਣੀ ਨਾਲ ਕੱਪੜੇ ਧੋਵੋ।
- ਜ਼ਿਆਦਾ ਦੇਰ ਲਈ ਕੱਪੜੇ ਧੋਵੋ।
- ਕੱਪੜੇ ਧੋਣ ਵਾਲਾ ਤੇਜ਼ ਪਾਉਂਡਰ ਵਰਤੋ।
- ਜ਼ਿਆਦਾ ਲਿੱਬੜੇ ਕੱਪੜਿਆਂ ਨੂੰ ਦੋ ਵਾਰ ਧੋਵੋ।
- ਧੁੱਪ ਵਿੱਚ ਕੱਪੜਿਆਂ ਨੂੰ ਸੁਕਾਉ।
- ਧੋਣ ਤੋਂ ਬਾਦ ਵਾਸ਼ਿੰਗ-ਮਸ਼ੀਨ ਨੂੰ ਧੋਵੋ ਤੇ ਸਾਫ਼ ਕਰੋ।

Phase 2: Production



- 2 PSAs to introduce safe handling practices
 - short , Bollywood style teaser video
 - longer instructional video
- Production
 - Scripted reviewed by target population and gov't
 - Hired Talent
 - Actors and dancers part of the Indo-Canadian community
- Translation of posters, magnets, website as supporting materials











Format and Dissemination

- Punjabi-style Public Service Announcement
 - Bollywood music and Bhangra dancers
- Tailored to local population
 - Include local celebrities
- Dissemination
 - local punjabi programming
 - In Sikh temples (Ghurdwaras)
 - Website

Resources

This project aims to raise awareness about the current BC Government's guidelines on how to safely wash clothing that is worn during farm work or pesticide application. Clothing that has been worn in fields where pesticides are used has been found to be one of the major sources of indoor pesticide contamination. Safe handling of these garments can reduce farmers' and farm family members' exposure to pesticides.



Public Service Announcement

These short public service videos introduce the Wash With Care project and laundry instructions for farm families. Shot in the Fraser Valley of British Columbia these videos feature Balinder Johal as The Mother, Michelle Johal as The Daughter, and the N.S.M. Bhangra dancers from Simon Fraser University.

[30 sec](#) | [1 min](#) | [2.5 min](#) (extended dance mix)



Laundry Instructions

This video provides step-by-step instructions for how to launder clothing that has been worn during farm work or pesticide application.

[1.5 min](#)



Laundry Instructions

[English](#) | [Punjabi](#)

Wash With Care: 30sec TV PSA



Wash With Care: Instructional Video



Evaluation

- Initial response
 - Very enthusiastic
 - Attracted international and national news coverage (Hindustan Times, CBC International, CBC The National)
- Programming shown over 6-10 months on television
- Adopted by Worksafe BC as a resource for farmers and families
- Punjabi instructions given out by Farm agencies

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Pesticide Education Goes Bollywood

UBC School of Environmental Health

Posted: December 18, 2011



A bhangra drummer pops out from behind an outdoor laundry machine like a manic Jack-in-the box.

Then, women in searingly bright saris – and purple rubber gloves – pour out from behind the house and launch in to a Bollywood-style dance routine. But they aren't in India: they're whirling around in a Fraser Valley farmer's field.

Conclusion

- Punjabi farm families unaware of pesticide risks
 - Very receptive to targeted communication
- Recruitment of local talent facilitated dissemination
 - Very useful for doing the work and promoting it
- Creative approach can cut through denial
 - “that’s not an issue for me”
 - Can captivate populations to pay attention
- Opportunity to learn a lot for researchers themselves!



**Thanks to David Murphy, the SFU Bhangra team, Christie Hurrell,
Natasha McCartney and Corrine Brown**

Questions?



This project is dedicated to my daughter Lyra Murphy who had such a good time learning how to dance Bollywood!

Thank you!

www.washwithcare.ca

