



# A History of Wildland Fire Smoke in Manitoba

Barbara Crumb and Darlene Oshanski  
Manitoba Health Office of Disaster Management



*Halifax National Smoke Forum 2014*

# Overview

- A. Wildland Fire and Smoke in Manitoba: Seasonally and Situationally
- B. A Broad Look at the Province's Wildland Fire and Smoke History: 1989 and 2012 as Turning Points
- C. Next Steps



# General Trend of the Wildland Fire Season



## **Late April/Early May:**

- Usually begins with human-caused fires in southern and central Manitoba

## **June:**

- Decline of fires (generally a wet month, and flushing of vegetation has occurred)

## **July/Early August:**

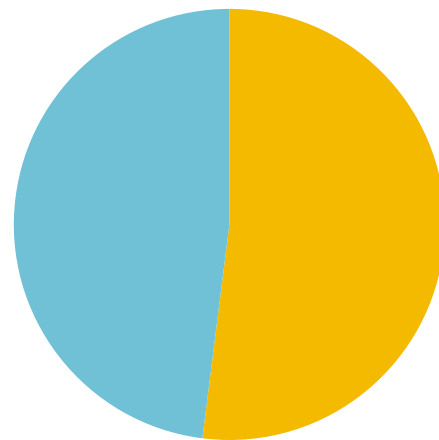
- Second peak of fires occur due to lightning in northern and eastern MB

## **Late August/Fall:**


- Human-caused fire season closes off the season in Fall in southern Manitoba

# Manitoba's Wildland Fire and Smoke Situation

- 1.** Forests make up about 263,000 square kilometres (102,000 sq mi), or **48 percent**, of the province's land area.



■ Other ■ Forest



**2.** North American wind systems can fuse heavy smoke from the Northwest Territories, Northwest USA, and Northwest Ontario into Manitoba from three sides (thus the adverse impacts of forest fire smoke can impact Manitoba communities even if the province is fire-free)

# JET STREAM FLOW

Wednesday Jul. 9, 2014

**Smoke Carried South By Wind**




# SPECIAL WEATHER STATEMENT

Today

**Poor Air Quality  
From Smoke  
Moderate Health Risk**





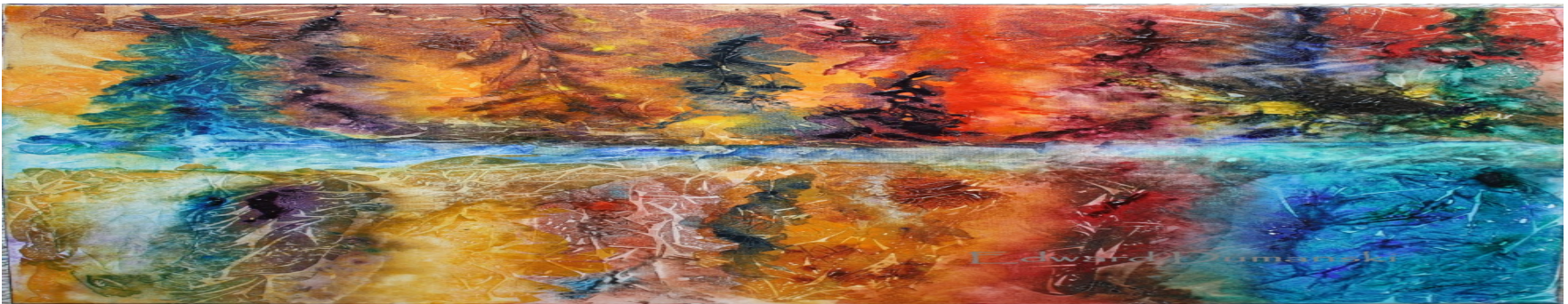
3. Manitoba has an extensive number of northern and remote communities. These communities, many of which are First Nation, are;

- ❖ situated close to potential wildland fires and smoke affected areas
- ❖ often difficult to reach



# Manitoba's Wildland Fire History

- Complete history records date back to 1918
- Before 1989 (most significant fire)
  - Average of 394 fires & 130,000 ha per yr
  - Four years ('76, '77, '80, '88) where more than 800 fires occurred
  - Two years ('26, '61) where the area burned exceeded 1.0 million ha

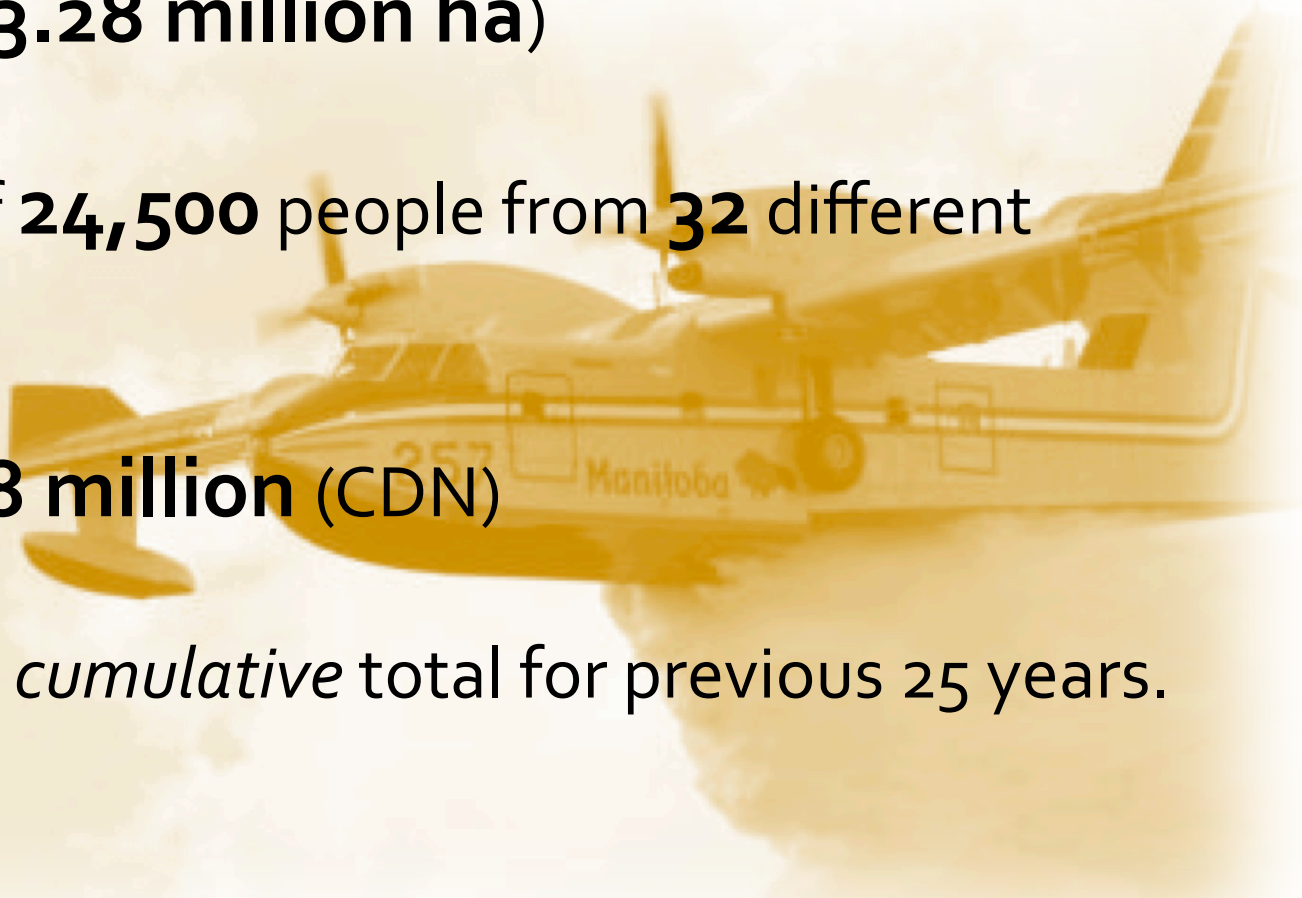


**July 24<sup>th</sup>, 1989...**

A state of emergency was declared by Albert Driedger, Manitoba's minister of emergency measures. Retired or vacationing civil servants were asked to report for duty as exhausted relief workers toiled around the clock.

**“Virtually all of northern Manitoba is on fire. Once you get 15 minutes out of Winnipeg, all you see is smoke.”**

# The 1989 Wildland Fire Season...

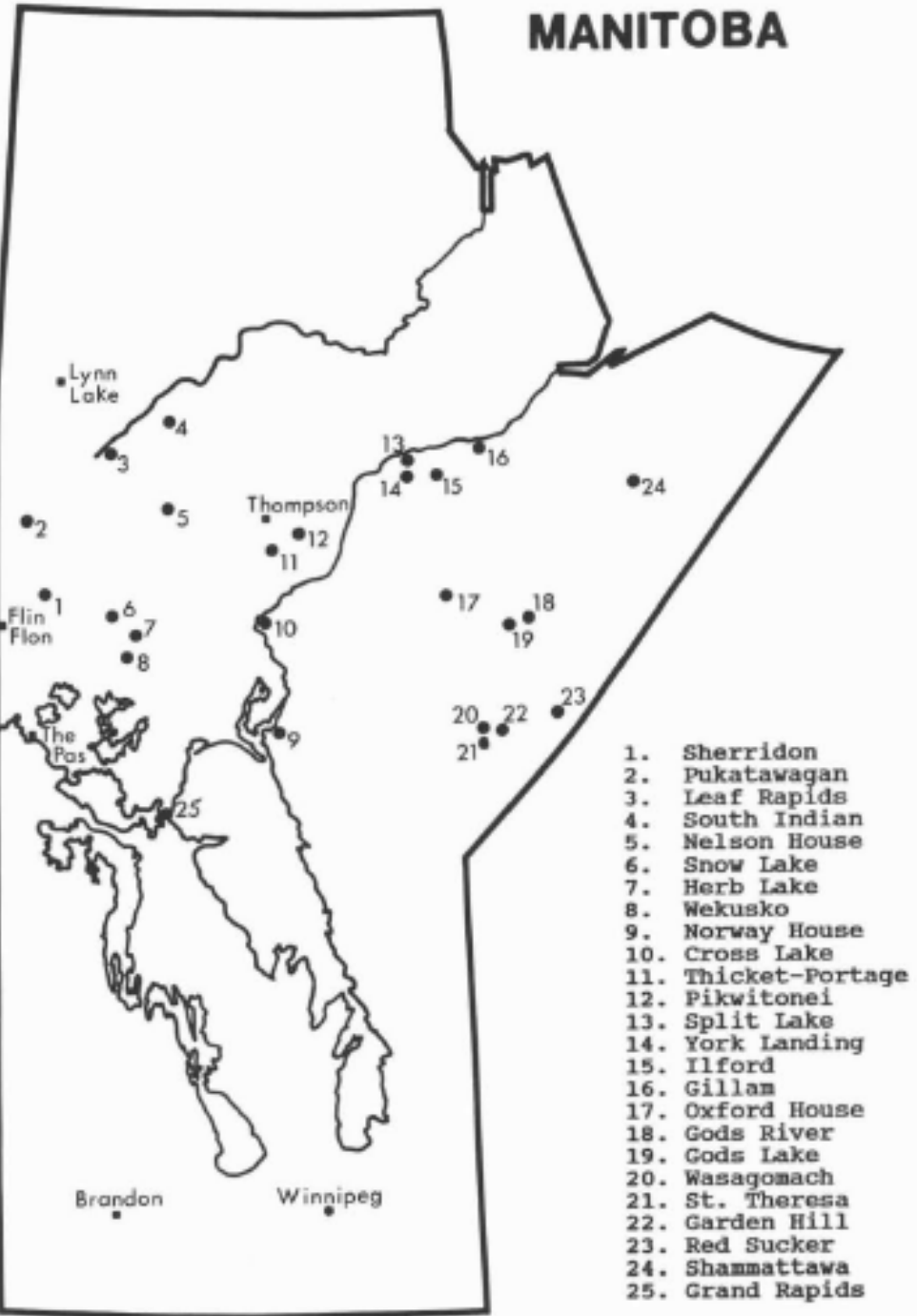
- New record was set for number of fires (**1147**) and area burned (**3.28 million ha**)
  - Evacuation of **24,500** people from **32** different communities
  - Cost over **\$68 million** (CDN)
  - Exceeded the *cumulative* total for previous 25 years.
- 

# The 1989 Fire Season...

- First major outbreak of fires in central Manitoba in mid-May, which was followed by a second peak of fires in northern MB between July 16 and Aug 2
- Both periods saw multiple fire ignitions, severe weather and extreme fire behaviour



# MANITOBA





*"We waited with everyone else for a plane to take us from this chaos"*




Figure 4. The Sandy River Fire in eastern Manitoba, May 13, 1989.

# 1989: Lessons Learned

Meteorological, conservation, and wildland fire experts studied the '89 season and concluded:

- Even if the season was a rare event, extreme fire danger would occur again in Manitoba
- Preparedness/ability of fire management organizations was called into question
- Three reviews (internal, external, public) were sparked



- 
- The 1989 season still remains as a reminder of what can happen in Manitoba's forests
  - Continuing effort to determine creative, cost-effective and environmentally acceptable approaches to fire management that will ensure negative impacts of a season like '89 are minimized

Since 1989...



# Forest fire **smoke** causes hazy skies in Manitoba

**BRANDON SUN**

October 5, 2014

News | Sports | Opinion || Entertainment |  
Local News | Community News | Sun Weekend |



**THE GLOBE AND MAIL**

Search: | News & C  
Enter a term, s

Home | News | Opinion | Business | Investing  
National | Politics | Toronto | British Columbia  
Education | Our Time to Lead



HOME NEWS SP

No way out: **Smoke** hampers evacuation

TORONTO VOTES | SUN HOCKEY POOL | LET'S RENOVATE! | GOLF COURSE DIRECTORY |  
READ E-EDITION

**HOME**

## **Smoke** from forest fire prompts evacuation

WINNIPEG SUN

FIRST POSTED: SUNDAY, JULY 25, 2010 10:34 PM EDT | UPDATED: SUNDAY, JULY 25, 2010 10:35 F

You are here: Brandon Sun > Latest News > SMOKE

## LATEST NEWS

Brandon Sun - ONLINE EDITION

**Smoke** from forest fires forces hundreds to be evacuated

By: Staff Writer

Thursday, Jul. 21, 2011 at 2:06 PM | Commer

PRINT

E-MAIL

Tweet

People ponder temporary move from **smoke-**plagued northern Manitoba town



# The 2012 Fire Season

"This is the largest evacuation that we've handled in recent times"

-Brian Kayes from the City of Brandon



## Statistically however...

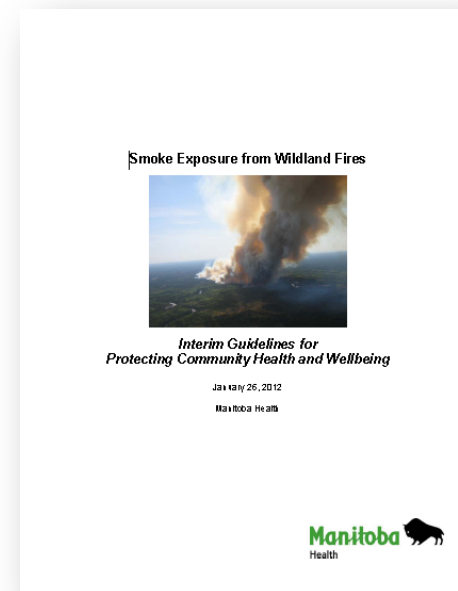
The 2012 season consisted of;

- 497 fires (1/2 of '89)
- 216,888 ha burned (1/15 of 89')

...on the other hand, 2012 was outstanding for other reasons...

# Interim Guidelines

On January 26<sup>th</sup>, 2012 Manitoba Health's Public Health Branch and Office of Disaster Management Branch, release the ***Smoke Exposure from Wildland Fire: Interim Guidelines for Protecting Community Health and Wellbeing***





## BlueSky

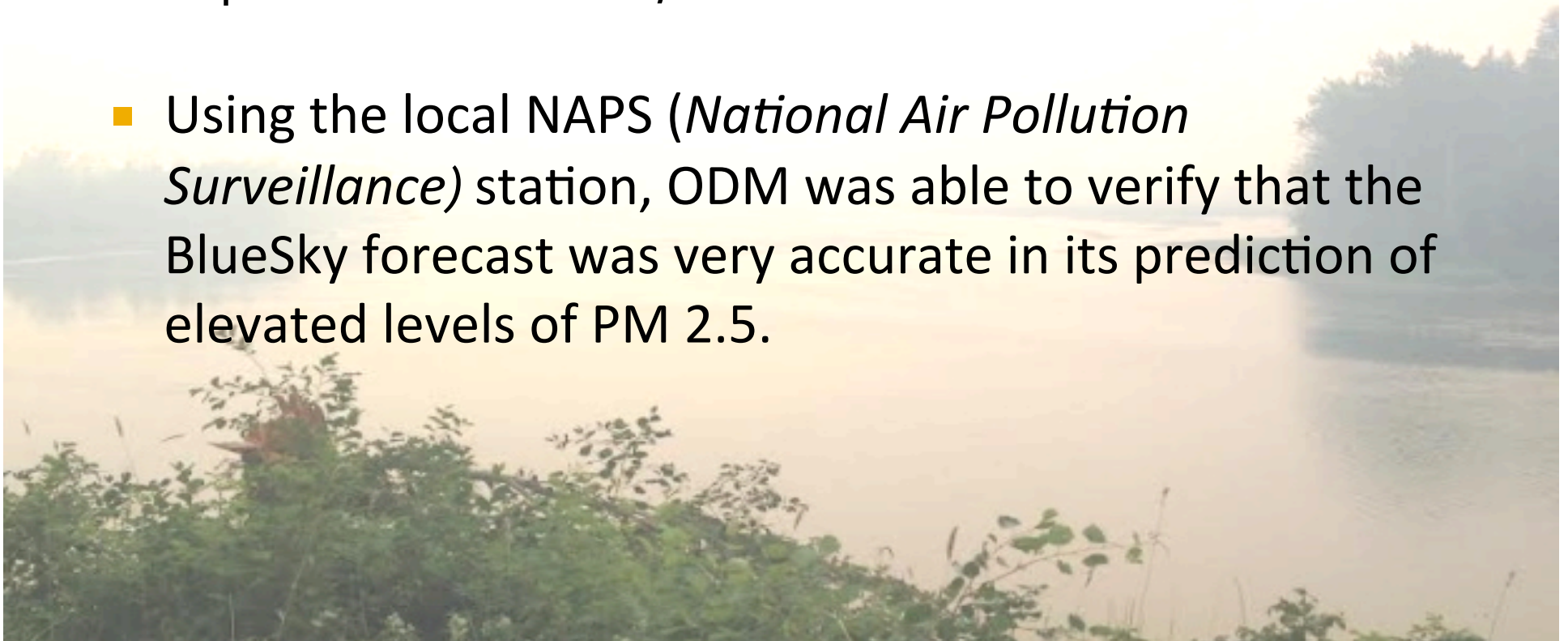
- In the spring of 2012, ODM provided BlueSky with the funding required to include Saskatchewan, Manitoba and Northern Ontario in its wildland fire smoke plume modeling.





## BlueSky: Forecast and Assessment

- On July 13, 2012, BlueSky forecasted a smoke event over the coming days with elevated PM 2.5 levels expected in Flin Flon, Manitoba.
- Using the local NAPS (*National Air Pollution Surveillance*) station, ODM was able to verify that the BlueSky forecast was very accurate in its prediction of elevated levels of PM 2.5.



# Wildland Fire Smoke Advisory

Manitoba Health's Office of Disaster Management (ODM) issued a **Wildland Fire Smoke Advisory** suggesting that residents of Flin Flon and surrounding areas take appropriate measures to protect themselves from the smoke.



MediaBulletin

July 13, 2012

WILDLAND FIRE SMOKE ADVISORY ISSUED  
FOR CENTRAL, NORTHERN MANITOBA

Over the next few days, some Manitobans may be exposed to smoke drifting into central and northern Manitoba from a number of wildland fires that are burning in Alberta and Saskatchewan. Smoke levels may vary throughout the province over the weekend. They may be highest tomorrow in areas around Flin Flon and The Pas, but other areas may be impacted as well.

Manitoba Health advises that people at higher risk, such as young children, the elderly and people with heart or lung conditions (particularly asthma), should take additional precautions if conditions are hazy with a smoke odour, if visibility is less than eight kilometres or if they are having symptoms. Others may wish to avoid strenuous activity in these conditions. If smoke is thicker, everyone may wish to consider precautions. Exposure to smoke can cause sore eyes, tears, coughing and a runny nose.

In areas affected by smoke from wildland fires, Manitoba Health encourages residents to:

- use common sense about outdoor or strenuous physical activity; if breathing becomes difficult or uncomfortable, stop or reduce the activity;
- reduce exposure to smoke by staying indoors or moving to areas with cleaner air, as conditions can vary dramatically by area;
- if an air conditioner is drawing in smoke from outside, consider reducing the external air intake, running it intermittently or turning it off;
- keep indoor air cleaner by avoiding smoking or burning other materials; and
- use a commercially available, high-efficiency particulate-air (HEPA) filter to further improve indoor air quality near the filter.

Manitobans with health questions or concerns can contact their health-care provider or Health Links-Info Santé at 204-788-8200 or 1-888-315-9257 (toll-free). More information on the health effects of smoke is available at [www.gov.mb.ca/health/publichealth/environmentalhealth/smoke.html](http://www.gov.mb.ca/health/publichealth/environmentalhealth/smoke.html).

- The result of ODM's advisory was very positive; despite the increased PM 2.5, there were no reported increases in hospital admissions.

WILDLAND FIRE SMOKE ADVISORY ISSUED  
FOR CENTRAL, NORTHERN MANITOBA

Over the next few days, some Manitobans may be exposed to smoke drifting into central and northern Manitoba from a number of wildland fires that are burning in Alberta and Saskatchewan. Smoke levels may vary throughout the province over the weekend. They may be highest tomorrow in areas around Flin Flon and The Pas, but other areas may be impacted as well.

Manitoba Health advises that people at higher risk, such as young children, the elderly and people with heart or lung conditions (particularly asthma), should take additional precautions if conditions are hazy with a smoke odour, if visibility is less than eight kilometres or if they are having symptoms. Others may wish to avoid strenuous activity in these conditions. If smoke is thicker, everyone may wish to consider precautions. Exposure to smoke can cause sore eyes, tears, coughing and a runny nose.


In areas affected by smoke from wildland fires, Manitoba Health encourages residents to:


- use common sense about outdoor or strenuous physical activity; if breathing becomes difficult or uncomfortable, stop or reduce the activity;
- reduce exposure to smoke by staying indoors or moving to areas with cleaner air, as conditions can vary dramatically by area;
- if an air conditioner is drawing in smoke from outside, consider reducing the external air intake, running it intermittently or turning it off;
- keep indoor air cleaner by avoiding smoking or burning other materials; and
- use a commercially available, high-efficiency particulate-air (HEPA) filter to further improve indoor air quality near the filter.

Manitobans with health questions or concerns can contact their health-care provider or Health Links-Info Santé at 204-788-8200 or 1-888-315-9257 (toll-free). More information on the health effects of smoke is available at [www.gov.mb.ca/health/publichealth/environmentalhealth/smoke.html](http://www.gov.mb.ca/health/publichealth/environmentalhealth/smoke.html).

## Manitoba Health/Health Canada MOA

On December 5<sup>th</sup>, 2012 Manitoba Health and Health Canada sign a memorandum of Agreement to complete the following objectives;

- 
- A. Develop Specific Smoke Messaging
  - B. Develop First Nations Messaging for Smoke Events
  - C. Examine the health outcomes and appropriate messaging for situations where the Air Quality Health Index (AQHI) rises above 10
  - D. Provide Guidance for Manitoba decision-makers to protect people from wildland fire smoke
  - E. Examine the combined risks of smoke and heat and develop appropriate messaging for a combined smoke/heat event
  - F. Determine the validity of using AQHI as a wildland fire smoke response tool

- 
- All together, these components have begun to assist in simplifying the currently complex decision to evacuate residents of a community due to smoke from a wildland fire
  - Evacuations are inherently disruptive and costly—they should only occur when health benefits outweigh all risks



Our current system for assessing the risk involves multiple conversations between;

- Already over extended nurses at northern nursing stations
- The chief and council of the affected federal first nation reserve
- And the nurse manager of the First Nations Inuit Health Branch of Health Canada, located in the southern capital City of Winnipeg

# Key Developments Since 1989 and 2012:

- Health agencies and organizations in Manitoba have become much more involved in wildland fires
- Research points to the short and long term negative effects of breathing in particulate matter smaller like 2.5 microns in diameter





# Next Steps

- While Manitoba wildland fire suppression programs have enjoyed substantial resources – and greatly enhanced their operations – since the 1989 season, the health sector is only just beginning to realize the multi-layered role it has to play
- Manitoba Health has pursued this role in a number of ways, including:

# Next Steps

- ✓ Supporting research on the health impacts of smoke
- ✓ Conducting research and consultations on smoke messaging best practice
- ✓ Acquiring smoke monitors that measure particulate matter throughout mid to northern Manitoba
- ✓ Engaging stakeholders such as Health Canada, Manitoba Hydro, Environment Canada, BCCDC and private partners to aid in understanding and mitigating the negative impacts of wildland fire smoke