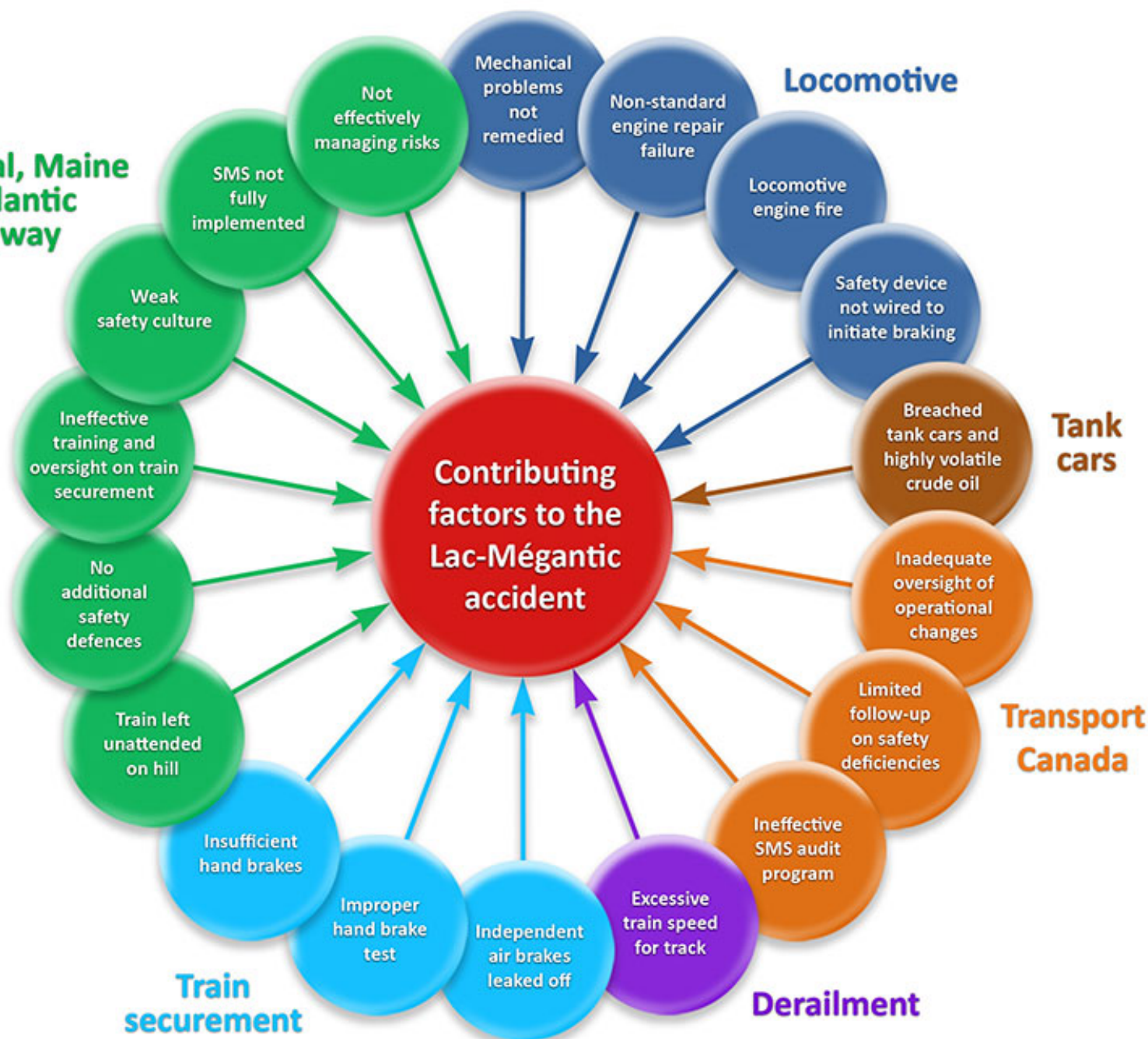




Lac-Mégantic July 6 2013

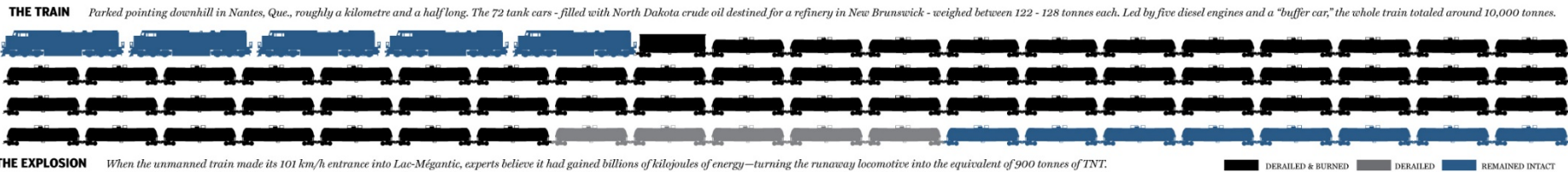
- The various incidents before the derailment illustrate how *Murphy's Law* can affect an event....."if it can go wrong, it will".

**Montreal, Maine
& Atlantic
Railway**



CONVOY CONTAINED

- 5 - Engines
- 1 - Buffer car
- 72 - Crude oil tank DOT-111



THE BEGINNING



Nantes

Altitude: 514 mètres

Sainte-Cécile

Marston

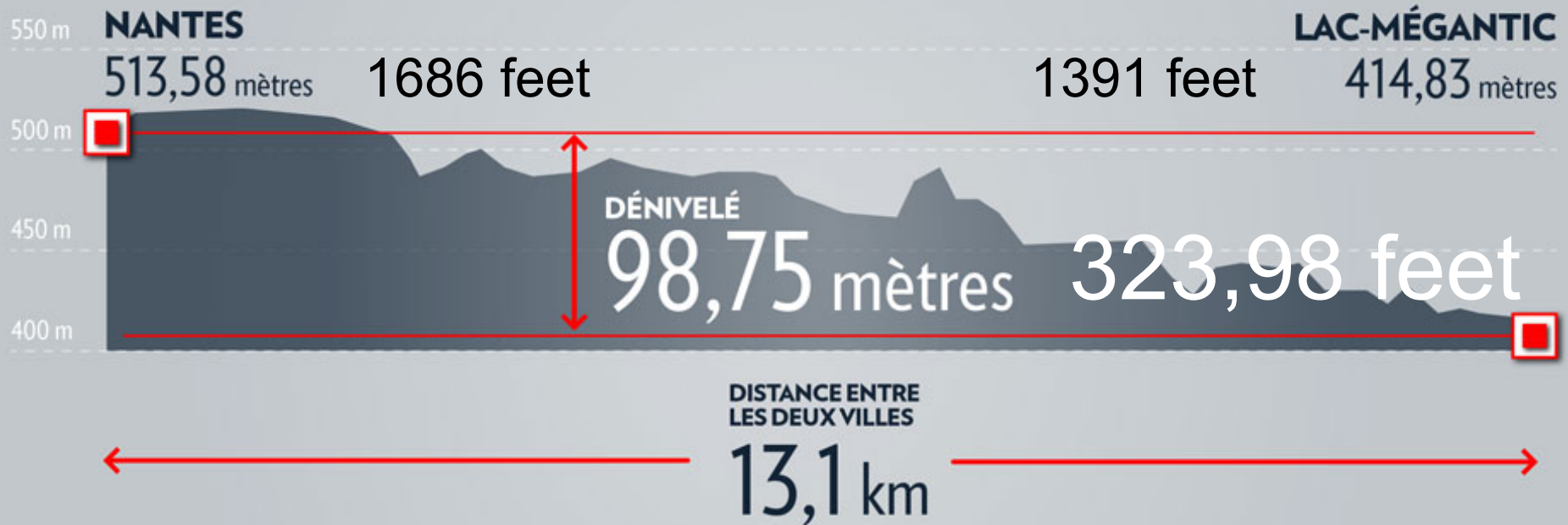
Lac-Mégantic

Altitude: 415 mètres

Frontenac



ELEVATION



SOURCE: MAPBOX STREETS

ILLUSTRATION: LA PRESSE CANADIENNE, LA PRESSE



0,008122 mile

Lac-Mégantic

July 6 2013 - 1 h 14

- ✓ Derailment of 72 crude oil tank car (100 tons)
 - ✓ 7300 tons of crude oil (UN1267)
 - ✓ 1 981 225 us gallons
- ✓ Multiple explosions
 - ✓ tank failure
 - ✓ Representing 1/16 of Hiroshima

INTERVENTION

- 1:16 – 911 call received 
- 1:17 – 911 to the officer on duty
- 1:18 – General alarm
- 1:20 – Fire confirmation 
- 1:21 – Mutual assistance requested - Nantes
- 1:21 – 2e general alarm
- 1:21 – Mutual assistance call made to Lambton, Saint-Romain, Audet, Lac-Drolet et de Saint-Augustin de Woburn FD

1:24



LAKE ON FIRE



DOWNTOWN PARKING LOT



Photo: Pierre Lebeau 6 juillet 2013 vers 1h30



DOWNTOWN PARKING LOT



IC COMMAND



Photo: Pierre Lebeau 6 juillet 2013 vers 1h30

MAIN STREET



Photo: Pierre Lebeau 6 juillet 2013 vers 1h30

VIEW OF THE LAKE



Photo: Pierre Lebeau 6 juillet 2013 vers 1h30

SHERBROOKE



SATURDAY MORNING



WATER SUPPLY



INTEROPERABILITY

- Equipment interoperability
 - Supply hose
 - 4 inches vs 5 inches
 - Hose thread
 - 1¾ hose line
 - NH (US)
 - NPSH (Quebec)
 - 2½ hose line
 - QST (Quebec Standard Thread)
 - NH (US)
 - Sherbrooke thread

INTEROPERABILITY

- Communications
 - Lost of radio communication (Out of electricity)
 - Back up not on the generator
 - Many radio frequencies
 - Radios not compatible

HEAT TRANSFERT



HEALTH HAZARDS



HEALTH HAZARDS



Photo: Pierre Lebeau 6 juillet 2013 vers 1h30

HEALTH HAZARDS



HEALTH HAZARDS



HEALTH HAZARDS



Photo: Pierre Lebeau 6 juillet 2013 vers 1h30, feu sortant des égouts

HEALTH HAZARDS



Photo - Radio-Canada

CRUDE OIL EVERYWHERE



EVERYTHING SEEMS QUIET



TANK FAILURE



FIRE STATIONS LOCATION



Fire Station 2

- Pumper (1978)
- Pumper/tanker (1978)
- Pumper/tanker (2008)

Fire Station 1

- Pumper (2001)
- 100 ft Ladder (1974)
- Rescue unit (1997)

HELMET CAMERA FIRE STATION 2



FIRE STATIONS LOCATION



Fire Station 1

This aerial photograph shows a town with a mix of residential and commercial buildings. A large area in the center-right is under demolition, with piles of rubble and debris. To the left, there are railroad tracks and a large parking lot. A marina with many boats is visible on the right side of the image. Two orange callout boxes with white text and arrows point to specific locations: 'Fire Station 1' points to a building in the upper-middle section, and 'Fire Station 2' points to a building in the lower-right section.

Fire Station 2

FIRE STATION 2



INTERVENTION

- Offence
- Defence
- Non-Intervention
 - Safety consideration for the first responders
 - Not enough foam available at the time
 - Suppression valve working announcing tank failure
 - High temperature
 - Evacuation to be done
 - No rescue to be perform

SATURDAY AFTERNOON



FOAM APPLICATION



FOAM APPLICATION



FOAM APPLICATION



FOAM APPLICATION



PARTNERS



PARTNERS

- Environmental, economic, communication, health partners were involved such as:
 - 2 Major cities
 - Sherbrooke - Quebec city
 - 6 municipal agencies (Chamber of commerce)
 - 23 Provincial Ministry or agencies
 - 10 Federal Ministry or agencies
 - 9 other agencies (Red Cross, Salvation army etc.)

FIRE DEPARTMENTS ON SITE

- 
- The background image shows a fire scene on a city street. Several fire trucks are parked, with their ladders extended. Firefighters in full gear are visible, working on the scene. The street is wet, and there are some red markings on the pavement. The overall atmosphere is one of an active emergency response.
- Asbestos
 - Audet
 - Austin
 - Beauceville
 - Blainville
 - Bruwnsburg-Chatham
 - Chandler
 - Cowansville
 - Dunham
 - East-Angus-Cookshire
 - East Broughton
 - Farnham
 - La Tuque
 - La Pocatière
 - Lac-Drolet
 - La Guadeloupe
 - Lambton
 - Laprairie
 - Lévis
 - Longueuil
 - Magog
 - Mont-Laurier
 - Montréal
 - Morin-Heights
 - MRC de Bellechasse
 - MRC des Érables
 - MRC de la Vallée-du-Richelieu
 - Nantes
 - Papineau
 - Pont-Rouge
 - Québec
 - Salaberry de Valleyfield
 - Sept-Îles
 - Shawinigan
 - Sherbrooke
 - Stanstead
 - St-Adalbert
 - St-Antoine-sur-Richelieu
 - St-Donat
 - St-Georges
 - St-Ludger
 - St-Marc-sur-Richelieu
 - St-Mathias
 - St-Martin
 - St-Philippe
 - St-Romain
 - St-Sébastien
 - St-Simon
 - St-Victor-de-Beauce
 - Ste-Adèle
 - Ste-Catherine-de-Hatley
 - Ste-Julie
 - Thetford-Mines
 - Trois-Rivières
 - Tring-Jonction
 - Upton
 - Waterloo
 - Woburn

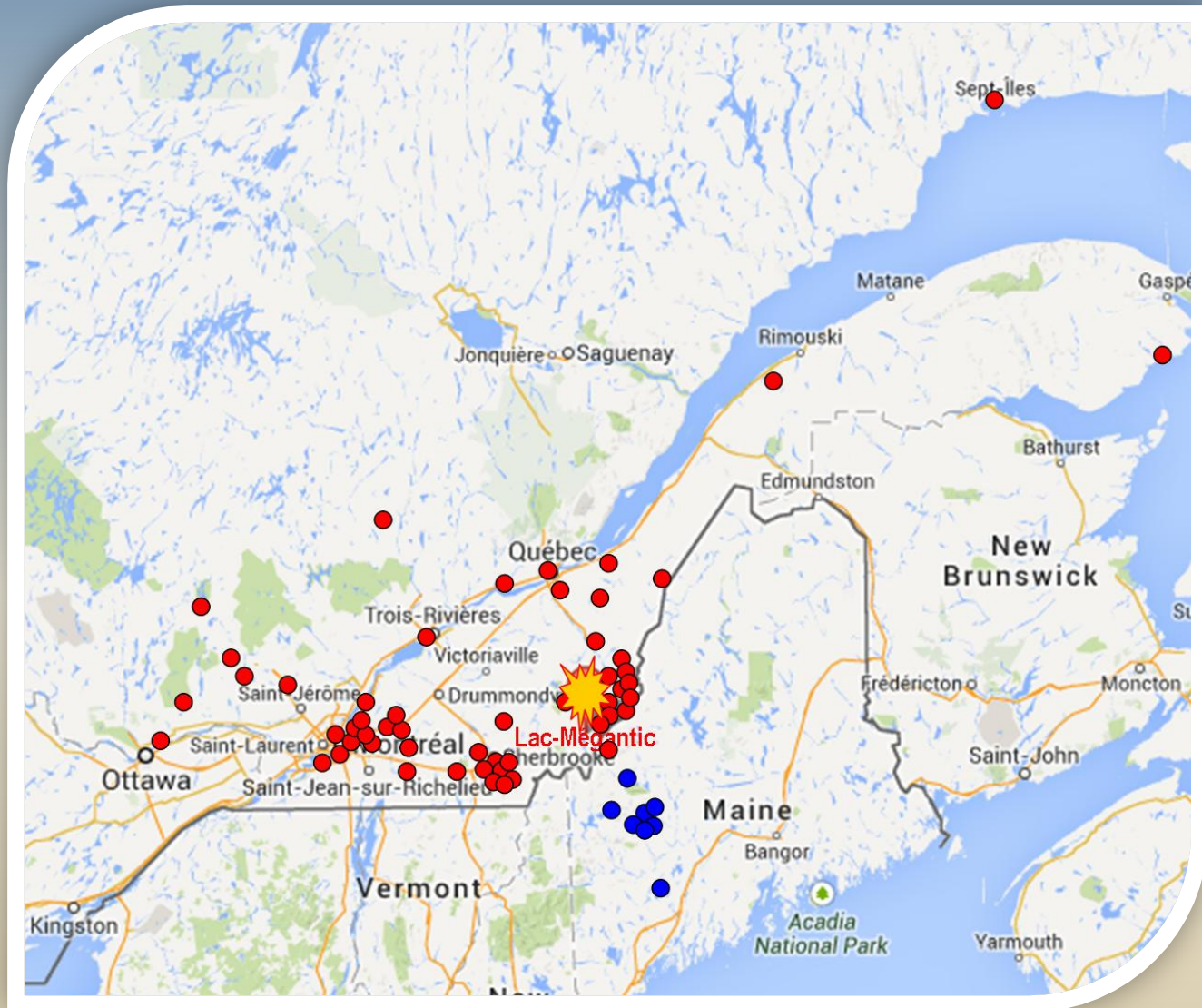
MAINE FIRE DEPARTMENTS

- Chesterville 107 miles (172 km)
- Eustis 45,2 miles (72 km)
- Farmington 96,2 miles (154 km)
- New Sharon 106 miles (171 km)
- New Vineyard 86,3 miles (138 km)
- Phillips 89,9 miles (145 km)
- Rangeley 69,8 miles (113 km)
- Strong 87,4 miles (140 km)



Photo – SQ Media

RESSOURCE MAPS FROM QUEBEC ● AND MAINE ●



AN ANGEL CAME TO OUR RESCUE





AN ANGEL CAME TO OUR RESCUE

- Salvation Army canteen
 - Anne-Marie Dagenais (Lieutenant)
- July 7 to August 10, 2013
- Fed more then 1000 firemen
 - Breakfast
 - Lunch
 - Diner
- Worked with food donation



Photohelico.com

ENVIRONMENTAL CONTROLS

- The largest environmental disaster in Quebec history (air, water and soil); 72 crude oil containing 2 028 379 US gal (7 678 251 I), 251 501 US gal (952 036 I) recover from tanker cars, soil and water and 1 776 878 US gal (6 726 215 I) has been lost.
- Establishment of two shoreline of 150 miles (240 km) characterization of the river Chaudiere and decontamination procedures.
- Marina decontamination (clean-up boat finish august 14, 2013)
- Boom installation on the lake and river.



Photo – Le Devoir

ENVIRONMENTAL CONTROLS



ENVIRONMENTAL CONTROLS

- TAGA fast mobilisation
 - the **Centre d'expertise en analyse environnementale du Québec** supports the various players by assessing problems and performing field measurements of the contaminants discharged into the environment.





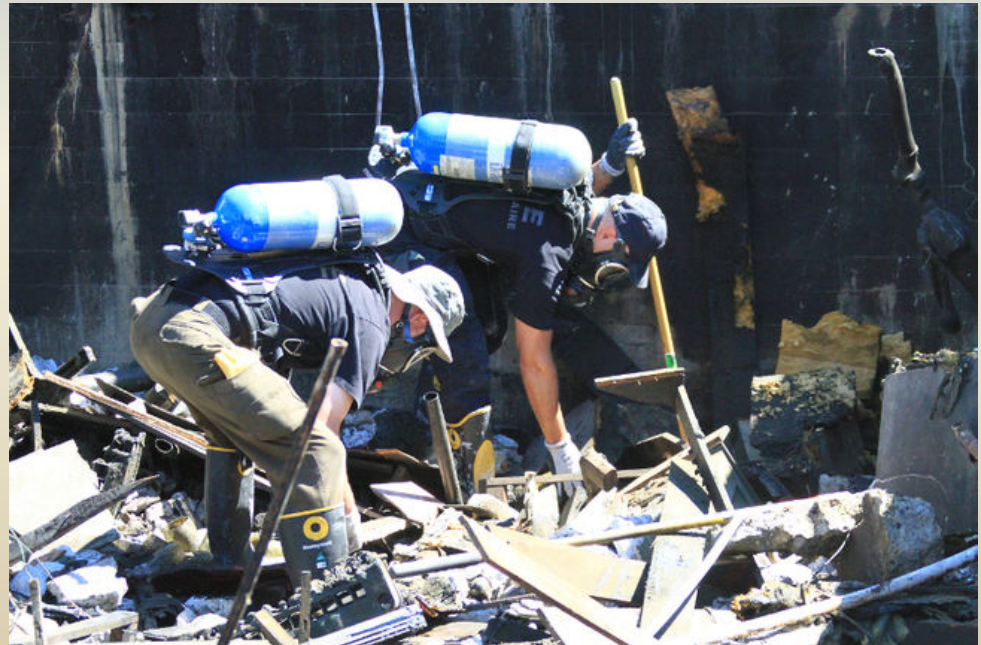
Photo – Denis Lauzon

PUBLIC HEALTH AGENCY

- On July 6 2013, Polycyclic aromatic hydrocarbon (PAH's) was 7 times higher than normal
 - ✓ PAH chemicals are often linked to oil spills.
- We had to take care of refrigerators and freezers and their outdated contents after a month of 95°F (35°C) temperature

PUBLIC HEALTH AGENCY

- Wear proper protection clothing and respiratory protection.
- Gas detection at all time



DECONTAMINATION STATION



Everyone had to be decontaminated before every meal

REHABILITATION



UNIFY IC COMMAND

On July 10 establishment of a unify IC command which is moderated by the Deputy Emergency Coordinator or Fire Chief and representatives are from:

- Lac-Megantic FD.
- SQ (Filet IV).
- Transport safety board of Canada (TSB).
- Canadian Centre for Occupational Health and Safety (CCOHS).
- Environment Canada (EC).
- Ministry of Sustainable Development, Environment and the Fight against Climate Change (MDDELCC) Quebec.
- Ministry for Public Safety (MSP) Quebec.
- Transport Canada (TC).
- **MMA et subcontractor :**
 - CETH (Toxicology & Human Health Environmental .
 - Golder (Environmental and Social Impact Assessment)
 - MD-UN (emergency response company).
 - RSR Environment (emergency response specialist)
 - Meridith Management.

RAILROAD AND TANKS DISMANTLE



DOT-111



DOT-111



RAILROAD AND TANKS DISMANTLE



RAILROAD AND TANKS DISMANTLE



INVESTIGATION

- Transport Canada,
- SQ Provincial police force,
- Transport safety board of Canada (TSB)
- Coroner.

THINK OUT OF THE BOX

- Explosive gas traveling in the Sewer and Storm drainage system
 - Solution : installation of a chimney



THINK OUT OF THE BOX



- We needed to empty the crude oil tank without using torches
 - Reduce the quantity of foam
 - No sparks
 - No need to issue a hot work permit



THINK OUT OF THE BOX

- We needed to build a ground water supply system which the water was pump from the lake with relay pumps
 - Need to travel on the road
 - 3000 feet of supply line



THINK OUT OF THE BOX

- High level of Benzene
 - Installation for Positive Pressure Ventilator (PPV)



Before



After



POST TRAUMATIC STRESS DISORDER

- Social workers and psychologists requested at the fire station (team of 3 people)
- Firefighter meeting July 15, 2013 and August 21, 2013
- Employees assistance service available at all times
- November 18 and 25, 2013 – Class on post traumatic stress disorder for the firemen and January 27 for their spouses

Nothing could prepare yourself for this in your community but :

- Classes, conferences, training, hands on training etc. will be a way to help you :
 - Response quickly
 - Take rapid decisions
- Today we should change our thinking
 - The word IF should be replace by WHEN

IN THE MORNING



IN THE MORNING



IN THE MORNING



IN THE MORNING







YOU HAVE TO ANSWER THE CALL
HOW WOULD YOU REACT ?



TEAM EFFORT



TEAM EFFORT



THANK YOU!