

NEWFOUNDLAND
& LABRADOR
OCCUPATIONAL
HEALTH & SAFETY
ASSOCIATION

Conference 2016



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Right Choice Right Reason

Traffic Control: An Overview

May 2016



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association
Conference 2016

Outline:

- Introduction
- Traffic Control as an Occupation
- Why Traffic Control?
- The Planning Process
- Communication
- Legislation
- TCM Committee
- Training
- Additions to 2014 TCM
- Work that Involves Traffic Control
- Transportation Association of Canada (TAC) and MUTCD
- Causes of Work Zone Related Safety Events
- TW Trends in Traffic Control
- Signage Requirements of TCM – The Pendulum Effect
- Road User Injury & Fatality Statistics
- Comments
- Reducing Hazard Exposure
- Planning Traffic Control
- Conclusion
- References



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association

Conference 2016

Introduction:

- For a seemingly straightforward operation, traffic control is one of the more complex, unpredictable workplace environments when it comes to the safety of employees, contractors, and the public.



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association
Conference 2016

Traffic Control as an Occupation

- **Traffic control (flagging) is not a desirable occupation due to the risk of being struck, long hours, and exposure to all weather conditions. Some say it is the “hardest job they ever had”.**
- **Fatigue can be a big issue**
- **Attitudes of drivers, and driving habits, are major challenges**
- **Traffic control (layout selection) takes specialized training, knowledge and experience using the Traffic Control Manual (TCM)**



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association

Conference2016

Why Traffic Control?

- **Traffic control is utilized to direct pedestrian and vehicular traffic around a road condition**
- **Where the normal flow of traffic is impeded, the requirements of the TCM must be observed**
- **Traffic control may also be used when workers are not present but the condition of the road surface has been compromised**



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association
Conference 2016

The Planning Process

- Depending on the size of project, the work planning process usually starts with selection of a traffic layout from the TCM
- Leads to a hazard assessment, discussed during a Toolbox Talk
- Emergency plan required



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association
Conference 2016

Communication

- Advance signage warns of work ahead
- May be media communication of the work planned
- May involve temporary speed reduction, lane closure, and advisory signs
- Diversions or detours may be necessary
- Variable message boards are very effective
- At end of work zone, signage indicates that traffic can return to normal conditions



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association
Conference 2016

Legislation

- In NL, the legislative authority for non-municipal traffic control is the TCM. (OHS Regulations, Section 373(3))
- The TCM is published by the Department of Transportation and Works (TW)
- The requirements of the TCM are enforced by TW and the OHS Division of Service NL.
- The Highway Traffic Act is enforced by police agencies



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association
Conference2016

TCM Committee

- **Within TW, a standing TCM Committee reviews traffic issues regularly and updates the TCM.**
- **Membership currently consists of TW employees and representatives of Heavy Civil Association (HCANL).**
- **Workplace NL is joining as an “ex officio” member.**
- **When changes (revisions, additions) occur to the TCM, training curricula are revised and approved by Workplace NL (formerly WHSCC)**



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association
Conference2016

Training

- There are currently 13 training curricula approved by Workplace NL
- Depending on which curriculum is being delivered, training may be the 1-day course for flag persons, or a 2-day course for supervisors involved with traffic layouts and utilization of the TCM.
- For details of training providers and dates, refer to the Workplace NL “Central Training Registry”



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association
Conference 2016

Additions to 2014 TCM

- For summer maintenance season 2016, it was hoped to issue a revised Traffic Control Manual
- This is now targeted for this fall
- Important changes will be published as additions to the 2014 TCM.
- Available on-line at gov.nl.ca



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association
Conference 2016

Additions to 2014 TCM

All changes will be listed

Some of the planned additions include:

- Provisions for night-time work
- Crash attenuators section
- Signing of incident and emergency operations



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association
Conference 2016

Work That Involves Traffic Control

- **TW and its contractors provide summer and winter maintenance (snow clearing and ice control) on approx. 9,800 kilometers of primary and secondary highways and community access roads.**
- **In 2013-14, construction of new roads and road improvement projects with expenditures of \$205.6 million.**
- **Purchase and application of salt and sand for 159 town councils , health authorities, school boards and other entities**
- **Most of these activities involve traffic control**



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association

Conference2016

TAC & MUTCD

- The elements of the NL TCM are based on national standards suggested by the Transportation Association of Canada (TAC)
- In many countries, notably USA and Australia, the national standards are contained in a document referred to as the Manual of Uniform Traffic Control Devices (MUTCD)



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association
Conference 2016

TAC & MUTCD

- The MUTCD is a working document constantly revised and kept up to date by members of TAC's committees and reporting councils.
- Other countries like Australia and the United States have their own MUTCD's based on their traffic conditions which define their standards, providing guidance and ensuring uniformity of traffic control devices in their jurisdictions.



Newfoundland & Labrador
Occupational Health & Safety
Association

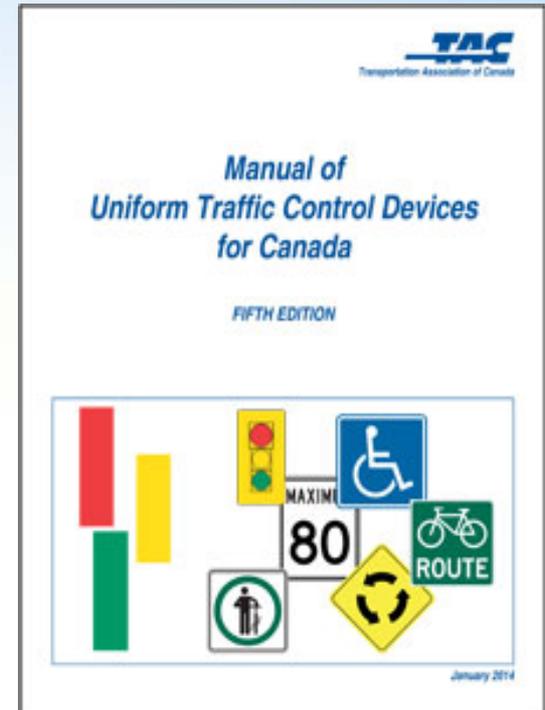


NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association
Conference2016

TAC & MUTCD

- National association, the mission is to promote the provision of safe, secure, efficient, effective, and sustainable transportation services in support of Canada's social and economic goals.
- TAC does not set standards, but is the source for roadway-related technical documents, best practices, and national guidelines that are referenced in many jurisdictions across the country.



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association
Conference 2016

Causes of Work Zone Related Safety Events:

Despite traffic control, safety events occur:

- Distracted driving = Impaired driving
- Traffic congestion
- Speeding motorists
- Inconsiderate / impatient drivers
- Limited Sight Distance
- Inadequate or confusing traffic control setup
- Inclement weather conditions
- Working vehicle movements (in/out of work zone)



(Kivi & Olidis,

2015)



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association
Conference 2016

TW Trends in Traffic Control

- **Formalize The Process**
 - Toolbox talks, education, training, hazard assessments, planning, etc.
- **Personal Protective Equipment**
 - Hi-Visibility Safety Apparel (HVSA), hard-hats, safety boots, etc.
- **Control Vehicles**
 - Traffic Control Equipment**
 - Crash attenuators, water barrels, variable message boards, lights, etc.
- **Police Assistance In Work Zones**
- **Avoidance of Peak Traffic Times**



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association
Conference 2016

Signage Requirements of TCM – The Pendulum Effect

- Trend has been towards more descriptive content, more layouts, and increased signage requirements
- May demonstrate due diligence, but does it make our workplaces any safer?
- More layouts requested, but many workers comment that the most dangerous part of roadwork is installation and removal of signs



Newfoundland & Labrador
Occupational Health & Safety
Association

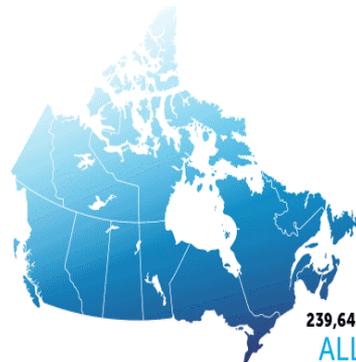


NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association
Conference 2016

Road User Injury & Fatality Statistics

2014 Injury Statistics Across Canada



LOST TIME CLAIMS

BY GENDER

Male
149,342

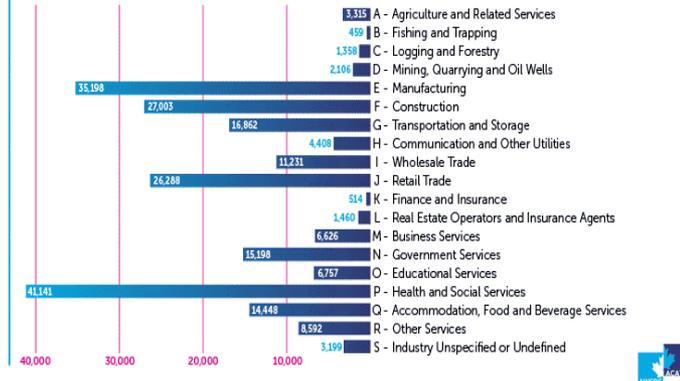


Female
90,285

BY AGE

15-19	7,998
20-24	22,587
25-29	24,331
30-34	25,246
35-39	25,448
40-44	26,545
45-49	29,387
50-54	32,466
55-59	25,414
60-64	13,534
>64	6,506

BY INDUSTRY



1. Health/Social Services (17.1%)
2. Manufacturing (14.7%)
3. Construction (11.2%)
4. Retail Trade (10.9%)
5. Transportation and Storage (7%)
6. Government Services (6.3%)

TOTAL INJURIES: 239,643

[Association of Workers Compensation Boards of Canada, 2014]



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association

Conference 2016

Road User Injury & Fatality Statistics

Fatalities/Injuries NL vs Canada:2013

Worst	Per 100,000 Population		Per Billion vehicle-km ²		Per 100,000 licensed drivers	
	Fatalities	Injuries	Fatalities	Injuries	Fatalities	Injuries
Best						
Canada	5.5 (4 TH)	470.2 (9 TH)	5.6 (2 ND)	481.9 (8 TH)	7.7 (3 RD)	671.2 (8 TH)
NL	5.3 (3 RD)	391.1 (4 TH)	5.8 (4 TH)	426.2 (6 TH)	7.7 (3 RD)	567.1 (3 RD)

Fatalities/Injuries NL vs Canada: 2012

Worst	Per 100,000 Population		Per Billion vehicle-km ²		Per 100,000 licensed drivers	
	Fatalities	Injuries	Fatalities	Injuries	Fatalities	Injuries
Best						
Canada	5.5 (4 TH)	470.2 (9 TH)	5.6 (2 ND)	481.9 (8 TH)	7.7 (3 RD)	671.2 (8 TH)
NL	5.3 (3 RD)	391.1 (4 TH)	5.8 (4 TH)	426.2 (6 TH)	7.7 (3 RD)	567.1 (3 RD)



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association

Conference2016

[Transport Canada, 2013]

Comments

- Traditionally, the traffic control requirements of the TCM may have been considered only a guideline for required layouts, open to interpretation and change by road crews.
- Deviations from TCM requirements frequently have caused confusion/misunderstanding by the general public. For example, leaving a flagperson sign in place when no flagger is present.
- Consistency in application of the TCM is essential to meet legislative requirements and demonstrate due diligence
- Increased signage requirements and traffic controllers come at some cost, which ultimately is paid by the taxpayers



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association

Conference 2016

Reducing Hazard Exposure

1. Speed
2. Volume
3. Frequency of Exposure

Despite controls and PPE, some residual risk remains. If the layout complies with the requirements of the TCM, due diligence may be proved



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association
Conference 2016

Planning Traffic Control

- Stopping or redirecting traffic flow to perform road maintenance is the safest method, but is not always feasible.
- Each task and its estimated completion time determines an acceptable set of TCM protocols, procedures and equipment needed to provide the appropriate level of safety
- Mobile – Work that moves intermittently or continuously (painting lines)
- Very Short-term – Fixed location, not exceeding 30 minutes
- Short Term – Work that occupies a fixed location exceeding 30 minutes but less than 12 consecutive hours
- Long Term – Fixed location, exceeding 12 consecutive hours
- Decision Matrix (2014 TCM, page 69)



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association

Conference 2016

Conclusion

- **Follow formal process:**
 - Hazard assessment
 - Emergency plan
 - Toolbox Talk
 - TCP/TCM training up-to-date
 - Certificates on hand
- **Observe requirements of TCM**
- **Encourage and support a strong Internal Responsibility System**
- **Promote effective two-way communication**



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association
Conference 2016

References

Association of Workers Compensation Board of Canada. (2014). *2014 Injury Statistics Across Canada*. Quebec: Association of Workers Compensation Board of Canada.

Johansson, R. (2009). Vision Zero - Implementing a policy for Traffic Safety. *Safety Science*, 6.

Kivi, A., & Olidis, C. (2015). *Challenges in Ensuring Worker Safety in Active Roadway Zones*. Toronto, ON: Applied Research Associates, Inc.

Louisiana State University. (July 2013). *The Joint Merge: Improving Work Zone Traffic Flows*. Washington, DC: U.S. Department of Transportation.

Royal Automobile Club of Victoria. (January 2014). *Work Related Road Safety*. Adelaide: Center of Automotive Research, The University of Adelaide.

Transport Canada. (2013). *Canadian Motor Vehicle Traffic Collision Statistics*. Ottawa: Transport Canada.

Transportation Association of Canada. (February 2014). *5th Edition: Manual of Uniform Traffic Control*. Ottawa: Transportation Association of Canada.

U.S. Department of Transportation. (July 2015). *Manual on Uniform Traffic Control Devices*. Washington: Federal Highway Administration.



Newfoundland & Labrador
Occupational Health & Safety
Association



NLOHSA
NEWFOUNDLAND AND LABRADOR
OCCUPATIONAL HEALTH & SAFETY ASSOCIATION
CELEBRATING 60 YEARS

Newfoundland & Labrador
Occupational Health & Safety Association
Conference 2016