
Infrastructure Health and Safety Association

List of Solutions and/or Controls for the Top Primary Causal Factors Identified for Roof Shingling (Management Participants)

Defined Risk Statement: Working at heights can pose serious unintended and adverse effects to the safety and well-being of a roof shingling installer, and nearby fellow workers.

Background:

Originally in 2015 and then again in 2019, IHSA partnered with the Ministry of Labour, Training and Skills Development (MLTSD) and industry-recognized subject matter experts to conduct a root-cause analysis on the causes construction workers in residential roofing falling while working at heights.

A total of **48 primary causal factors** were identified, ranked, and prioritized. All 48 primary causal factors were voted on, and based on the votes, a **Top 10** list was created. This collective process was open, transparent, and collaborative. The ranking and prioritization of causal factors was done using employer and worker votes only. The MLTSD and IHSA did not participate in voting.

Based on the results of the Phase One Working at Heights Root Cause sector workshop, it was determined that the most effective way to complete the solutions and controls portion was to conduct individual trade specific workshops. Having Phase 2 split out into specific trades allowed for more targeted solutions and recommendations to emerge to reflect the uniqueness and complexity of the varied work tasks involved in working at heights during residential construction

Residential Roof Shingling trade Root Cause Control Workshop Introduction:

On September 29, 2021, in collaboration with the Ministry of Labour, Training and Skills Development (MLTSD), IHSA convened an in-person Root Cause Control Workshop was convened to determine the top health and safety concerns within the **Residential Roof Shingling trade**.

This workshop included peer-recognized subject matter experts from management participants from the Ontario Roofing sector who came together in person to review and prioritize causal factors for the Roof Shingling Trade in Residential construction. Then most importantly the group identified solutions and controls for the top ranked causal factors. Note that the scope of this exercise did not include assessment of the listed solutions/controls. This list provides information on specific controls or activities that can be undertaken by the industry and/or regulator for the development or the support of a control. Although not part of the scope, it is understood that control performance should be specified, observable, measurable and auditable.

This is a supporting document for [the root-cause control workshop](#) report (a separate document) that should be referred to when using this information.

ROOF SHINGLING TRADE (MANAGEMENT WORKSHOP)

Top 10 Root-Causes: Worker Falls When Working at Heights

Priority	Category	Root-Causes
1	Process, Culture, Tools	<u>No fall protection from start to finish</u>
2	People, Culture	<u>Attitude</u>
3	Culture	<u>Underground economy</u>
4	Tools & Machines	<u>Improper PPE</u>
5	People, Culture	<u>Lack of engagement</u>
6	Environment, Culture, People	<u>Inconsistent / Lack of enforcement</u>
7	People, Culture	<u>Age (Young and old workers)</u>
8	People, Process	<u>Roofing – Not a Skilled Trade</u>
9	People	<u>Labour shortage</u>
10	Environment	<u>Piecework</u> <u>Weather</u>

Root-Cause details & Solutions/Controls that may reduce risk

1. No Fall protection start to finish

Category: People, Process, Tools & Machines, Measures, Environment, Culture

- a) Many workers are employed in the underground economy (where the emphasis is on speed and completion of work) do not wear Fall Protection Equipment as it slows them down.
- b) Workers working from heights using ladders, roof-jacks, cherry pickers etc. are not wearing PPE as these practices are not enforced on site.
- c) Different rules apply in different parts of a site (and other sites) due to lack of enforcement.
- d) If use of PPE is strictly enforced workers will leave for another contractor that does not enforce
- e) Workers should not be risking livelihood due to a shortage of labour.
- f) MLTSD enforces in outskirts of province where builders have a more difficult time.
- g) Worker education regarding the benefits of PPE and WAH instruction this is appropriate for the specific work they do is not being applied.
- h) Workers are not tied off properly (education lacking – workers need to know what PPE is available and appropriate).
- i) First anchor point – need a process that is efficient for installation of 1st anchor point. Getting on and off the ladder at start and end of the day.
- j) Builders want workers to always tie-off a ladder however a first anchor point is not available.
- k) Cherry picker could be used on every house to resolve lack of 1st anchor point.
- l) Need a 1st person up the ladder best practice / industry standard re ladder tie-offs.
- m) Safety attitude, culture and beliefs are lacking. Work is completed the way they have always done it and there are frequent hazard exposures.
- n) MLTSD are not enforcing consistently from top down (builder, employer, supervisor, worker etc.). Same rules are not being applied to everyone in the sector.
- o) New construction contractors who are part of an Association follow the rules, versus re-roofing contractors (many who operate in the underground economy) often do not.
- p) Builders do not want to pay for use of equipment like cherry pickers.
- q) The concept of building a scaffold around the house (for use by all trades) would require a cost sharing relationship (union installs and puts it up, however there is dispute with respect to ownership and maintenance of this equipment).
- r) Ladder use involves consideration for type of ladder installed, securement procedures, and guide for climbing up and down. No specifications or directives are listed in manufacturing instructions. An industry standard documented process on ladder use is needed and everyone must adopt it.
- s) We need consistent standards and industry practices for high risk scenarios for training.
- t) Lack of industry standards are being left up to the builder who utilizes various sub-trades who do it differently.
- u) Need a ladder guideline that includes requirement on how to secure ladder top and bottom and how to climb when not secured (i.e. first person up).

- v) Some MLTSD inspectors will stop workers from use of cherry picker equipment as they are not designed for access or egress, or there is no procedure on use in place. Inspectors want to see written permission from manufacture and instructions (ANSI).
- w) Some builders do not want cherry pickers equipment and want to use ladders, which results in inconsistent use of equipment.
- x) Shingling work is often needed last minute (to meet the completion deadline on a house) which makes scaffold installation not possible. Cannot push back on builder when this happens.
- y) Machinery being used by different trades is often overlapping and considered unsafe by some.
- z) The cost to scaffold a home would be expensive and affect overall cost.
- aa) Roofing is not a licensed trade.

Item	Suggested Controls and Solutions
1	Procedure to install first anchor point needed.
2	Install one scaffold around the house to be used by all trades.
3	Cherry Picker equipment to be provided at all sites. Use of this equipment should be built into cost for new construction as it would eliminate many safety issues however equipment training would be required.
4	Permit requirement should be applicable for re-roofing.
5	Develop a clear and simple procedure on setup of ladders for accessing roofs, and provide training.
6	MLTSD to increase consistent enforcement.
7	Scaffolding as a requirement stated in the regulations, as a builder's responsibility.
8	Various size of scaffolds should be made available.
9	Builders need to schedule work in a manner to accommodate safety (i.e. installation of scaffold).
10	If roofing was licensed it would be easier to control work and would impact underground economy.
11	In past GST credit was used reimburse business owners and would discourage cash-for-work business (Underground Economy).
12	Implement a Government rebate program for contractors to discourage the underground economy.
13	Have a designated third party contractor to manage scaffolds on new build projects.
14	Cherry picker training/certificate program to be required and made available.
15	Implement incentives for homeowners not to use underground economy (Gov't rebates etc.)

2. Attitude of the worker

Category: People, Process, Tools & Machines, Measures, Environment, Culture

- a) Labour shortage is a problem which is affecting employer / worker attitude: tackle the labour shortage (cannot let a worker go as they will go someone else).
- b) Supervisor is complacent because of labour shortage and does not want to lose a worker. Therefore this results in productivity over safety.
- c) Lack of enforcement at all levels (IRS). If worker is disciplined they will quit and go to work for someone else.
- d) Workers are aware that they have employers in a difficult position.
- e) Inconsistent enforcement by MLTSD causes contractor to make sure work is being done safely, however when they enforce safe practices, the worker will leave.
- f) Workers are not sanctioned for unsafe practices. The builder must discipline workers as well.

- g) Worker takes risks (similar to speeding) and they get comfortable, or complacent and take the risk.
- h) Education and enforcement will impact worker attitudes.
- i) Need to impact (fine / sanction) the worker for safety violations.
- j) Workers have the knowledge and training but have an “it’s not going to happen to me” attitude.
- k) Piece workers do not want to waste time on safety (e.g. tool box talks etc.) as they are wasting time and money.
- l) Builder has a “get work done” attitude and closes eyes in order to get work completed.
- m) Accountability and education of worker is a problem that must be enforced.
- n) Union and contractor are in such a dire need for workers they may hire workers with bad record.
- o) There is no supervision training education. Union needs to be more involved in hiring of a safety inspector.
- p) Clearance certificate for the sub-contractor are not checked re premium remittances and safety record.
- q) Sub-Contractor Management pre-screening is needed re qualifications, profile and LTI rate.
- r) Education and training at all levels is needed.
- s) Builder has someone on site 100% of time.
- t) How would using better equipment help to get workers on your site - improve the culture.

Item	Suggested Controls and Solutions
1	MLTSD should mandate safety classroom on sites for training / education and provide guidance.
2	More enforcement needed by MLTSD, builders, contractor, supervisor (down the line).
3	MLTSD needs to speak to worker and contractor/employer.
4	Need a rating pay scale for workers based on their work quality / experience.
5	Well educated crew leader/supervisor – you will have fewer problems.
6	WSIB Safety Check can learn safety record of subcontractor to avoid unsafe worker.
7	Need immigration and new workers trained in the trade.
8	Implementation of new equipment (scaffold / cherry pickers) improves attitude of worker.
9	MLTSD implemented that ladders for access/egress only – no one had cherry pickers; now this equipment is available.
10	Builder attitude and supervision on site needs to improve.
11	MLTSD needs to enforce construction practices – costs would be the same (workers would not move around)
12	Rules / Guidelines needed – followed by enforcement.
13	Rules/ procedures need to be built into worker training.
14	Need WAH training specific to sloped roofing.
15	Business license required in some municipalities.
16	Promotional campaign for all work related business requirements (permits etc.) to home construction. Here is what you need and explain the risk if you don’t have them.
17	Insurance companies could mandate specifics to construction.
18	Worker Safety performance records need to be monitored. The union could track safety performances profile.
19	Scale the workers on a risk taker approach basis: no infractions etc. payment and reward for skills etc. Risk and reward.
20	Union implement standards of qualification and screening on a risk based worker approach.
21	Include health and safety requirements and considerations with permits when performing re-roofing.
22	Union implement worker standards of qualification and screening and use a risk based approach.
23	Check sub-contractors using “Safety Check” to pre-screen their safety performance. Crew Leader and stigma came with them (i.e. poor contractors).

3. Underground Economy

Category: People, Process, Tools & Machines, Measures, Environment, Culture

- a) MLTSD have proposed revising the NOP requirements from a \$50,000 threshold to a hazard based cost system.
- b) Re-roofing contractors do not have to apply for a building permit or NOP.
- c) Homeowner need to be educated on the risk and lack an awareness re the risks of using underground economy contractors.
- d) Same rules do not apply in new build construction versus renovation / re-roofing.
- e) Permit system for re-roofing is not required.
- f) Public campaign targeting homeowner on the risks and what you need to know with respect to liabilities and responsibilities.

Item	Suggested Controls and Solutions
1	Roofing trade needs to be licensed (with minimum hours training required = apprenticeship).
2	Need to re-open immigration to address worker shortage.
3	Need to promote work opportunities in Canada / Ontario.
4	Need to make roofing a Licensed trade: worker would be transferrable via an apprenticeship program component.
5	If workers are licensed, contractor will have more confidence to hire them.
6	Trade needs to be standardize across the industry.
7	If roofing was licensed it would generate revenue for government and underground economy.
8	Need to license the trade regulate it (trade and ticket).
9	Initiate a homeowner incentive programs for HST credit with submitted bill and invoice. This has worked in the past and would be an incentive and rebate to use a legitimate contractor.
10	Need rules and guidelines like mandatory permit.
11	Need a requirement for a building permit to re-roof that includes the safety component (Need to disclose all safety information: WSIB clearance, Training etc., WAH for re-roofing of sloped roof),
12	Permit for re-roofing should be required and enforced by by-law officer on the contractor and homeowner.
13	QR code for shingle purchasing and tracking back to personal construction. Track and notification system etc. could be triggered by permit number.

4. Improper / Old PPE

Category: People, Process, Tools & Machines, Measures, Environment, Culture

- a) PPE supplies obtained at the consumer level not CSA approved etc.
- b) No procurement standards for manufacturing vs consumer suppliers.
- c) Equipment does not match the gear (for example rope size vs rope grab).
- d) Consumer sales at Home Depot and retail stores vs. buying directly from manufacturers of safety gear. (Expiry dates, not knowing standards, different equipment types and quality, related knowledge of enforcement vs. manufacturer instructions.)
- e) Workers need better training and education on equipment.

- f) Roofing contractor completes weekly, due diligence. Local union - no one in control of building (non-union vs union relationship).
- g) Builder completes orientation on site (re: sticker, screening, tickets, safety program)
- h) Working conditions and time pressures can result in incorrect use of PPE equipment.
- i) Roofing is not a Skilled Trade (not certified) therefore no set standards.

Item	Suggested Controls and Solutions
1	Legislate roofing as a licensed trade.
2	Government to assist with an apprenticeship program for roofers.
3	Consistent Union / training / safety / mandate mentality needs to be brought to low rise.
4	MLTSD greater enforcement needed with underground economy contractors using PPE equipment not approved.
5	Training program tied to a licensing program can be enforced.
6	Greater enforcement needed re PPE being used to include more fines / sanctions etc.
7	PPE suppliers need to be licensed to make sure equipment meets standards.
8	Can't take safety shortcuts to save money (i.e. re PPE costs) and buy below standard equipment.
9	Supervisor training required re appropriate PPE to be used by workers on a site.
10	Builders Safety Supervisor needs to verify training qualifications of workers and accreditation.
11	Specific quantity of building inspections are not outlined under the OHSA.
12	Procurement management system need re approved vendor list and certified equipment.
13	MLTSD greater enforcement needed with underground economy contractors using equipment that is not approved.
14	License the trade to attach a standard number of hours experience and skills.
15	Legislate that roofing as a licensed trade – criteria and investment developed by a government program (Driver Government, MLTSD, Union, Contractors).
16	Contractor to supply approved PPE and develop an exchange program.
17	Sub-contractors vs employee relationships and lack of onsite enforcement due to their relationship.
18	Train workers on equipment requirements and enforce rules to develop a Builder culture (similar to ICI).
19	Apply rules and fines with respect to purchasing and inspecting PPE.
20	Develop a supply chain and application to avoid purchase of restricted items, comply with licensing requirements, and authorize point of purchase.
21	Education program needs to be worker and trade specific training.
22	Provide separate education for supervisor specific responsibility.
23	Low rise builders need to have a 3rd party safety consultant that inspects training card and equipment check list.
24	Builder need to be responsible for inspections.
25	Union training requirements, train them at apprenticeship level to raise the standards.

5. Lack of Engagement

Category: People, Process, Tools & Machines, Measures, Environment, Culture

- a) Workforce has a lack of buy-in on safety.
- b) Disconnect with respect to worker and safety.
- c) Safety education (learned) is not being applied.
- d) Employer engagement is required with workers to work safely and to make time for safety.
- e) Pieceworker priority is to get the work done.
- f) Employers need to be more engaged in the accountability process.
- g) Need supervisors to lead by example.
- h) Piece-workers need to get work completed and do not want to be involved or engaged in morale.
- i) Attitude of worker is reflected in their awareness that more workers are needed (labour shortage).
- j) Lack of engagement between employer and sub-contractor in the accountability process.
- k) Culture is being affected by inconsistent enforcement. Need standards to have all employers adhering to the same rules (same requirement must apply to all – it will raise the bar).
- l) Foreman and Crew Leaders need to enforce and lead by example (site supervisor).
- m) Need Standardized training for supervisor - 3rd party safety supervisor at Builder level;
- n) Basics of Supervision training program does not expire and workers forget what was learned.
- o) Not having a standardized practice and explanation on how to get the first anchor on the roof is a problem: how do you get on and off the roof safely?
- p) No consistency on procedures and interpretation of green book rules.
- q) Enforcement officers and lack of competency: when enforcing the green book vs a practical show me how to do it, there is a lack of consistency with enforcement. Give inspectors' practical experience and job shadow) with respect to the expectation of the procedure to be developed and lack of standards in the industry.
- r) Reduce the grey areas of the highest risk of the process with respect to: How to tie off; How to use ladder safely; Use the data on determining highest risk points and tackle those.

Item	Suggested Controls and Solutions
1	Employers in industry must make workers accountable.
2	Employers / managers / supervisors must be on the same page.
3	Employers / workers must play by the same rules = consistent enforcement down the line.
4	Builder and Site supervisor must do his job and monitor worker performance.
5	Roofing specific supervisory training needs to be developed.
6	Regular supervisory training must be updated on a regular basis (3-5 yrs.).
7	Anyone that directs work should receive supervisory training.
8	Industry-specific supervisor training with 5-year expiry as minimum.
9	Supervisor training (Basics of Supervising) should be standardized and trade specific with renewal and refresher.
10	Need to set standards at employer level, trade community level, re staff shortage

6. Inconsistent / Lack of Enforcement

Category: People, Process, Tools & Machines, Measures, Environment, Culture

- a) Need enforcement consistency across the builders and employers
- b) Due to labour shortage employers put in vicarious position with respect to safety and productivity.
- c) Builder makes contractor pay fine for infractions (not worker).
- d) Charge builder, when a worker didn't comply and they find a way to recoup the cost back.
- e) Safety Program Standards need to be set for company to have a reputation of credibility.
- f) Builders need to have designated safety person on site at all time (NCSO)
- g) IHSA training schedule too hard to register
- h) Roofing trade unable to meet/ obtain COR certification
- i) Language barriers of workers re comprehension etc.
- j) Lot of employer handholding required
- k) Piecework has a big impact (re shortcuts and infractions being overlooked)
- l) Many do not care about safety / not enough workers to do the work.
- m) MLTSD inspectors are not consistent in their enforcement
- n) MLTSD enforce and do not educate/inform (tell you how to comply with the regulations).
- o) Need to review specific incident data re problem areas.

Item	Suggested Controls and Solutions
1	Set guidelines as to why the builder charges contractor (worker).
2	Set safety program standards for all builders (contractors).
3	Contractor management system is needed.
4	Modify COR standard to make it achievable for the Roofing trade.
5	Need a rule to make the OHS & Regulations applicable/required by all.
6	Give MLTSD inspectors practical experience and sit in class for 6 weeks.
7	MLTSD must provide guidance in addition to enforcement.
8	Need to reduce the grey areas around the highest risk activities.
9	Identify the top 3 highest risks and focus on corrective action to them.
10	Develop a procedure that will reduce number of incidents; have experts analyze completed homes.
11	Contractor management system needed (designate who hires, who is responsible): Through Tarion management system; Smaller version of COR and tiered approach; COR for small business; WSIB - Health and Safety Excellence program.
12	Sub-contractor Management process is needed that addresses: Role distribution, Worker orientation, Transferable (all workers have proper training and documentation).
13	Subcontractors need to have small business tool kit, pre-qualification process, to address: Language barriers, Lack of education, Inability to use technology (no cell phone or emails).
14	Working group to develop quality safe work practice/procedure.
15	IHSA research to evaluate the safety and productivity of the implemented procedure.
16	Guideline for Builder's responsibilities and limits to what they can back-charge.
17	Builders to have a level of oversight of subcontractor management.
18	Employers to provide onboarding programs to all subcontractors.
19	Develop a worker database to see past performance.
20	MLTSD to ensure adequately consistent application of regulations, through internal training and review.
21	Industry access to quality data to learn from the past and correct for the future where similar in scope of work, and to identify priorities.

7. Age / Culture

Category: People, Process, Tools & Machines, Measures, Environment, Culture

- a) Some younger workers feel they are invincible and older workers feel their way is the best.
- b) Only way to make worker change is to issue a violation (fine or suspension that affect their pocket book).
- c) Young workers are picking up the old workers bad habits.
- d) Many workers have the attitude it will not happen to me due to their experience.
- e) Subcontractor has a poor attitude then it carries forward to contractor, then to builder.

Item	Suggested Controls and Solutions
1	Need some way to review/check an employee's past work performance (scan / check).
2	An industry training standard is needed.
3	Older workers need to be engaged (get them to explain how the work is done) and get their input.
4	Need to develop a worker profile that includes a license and ticket system and tie in demerit points for infractions.
5	Need to use on the job life experiences (peer project) and stories to get safety message across.
9	Union and apprenticeship standards need to be developed.
10	Job specific training is required along with regulated refresher instruction.
11	Engage workers in conversations and solutions on the job.
12	Use a workers experience and professional recognition to get buy in.
13	Develop a worker database to see past performance.
14	Penalties that follow workers.
15	Unions to have set standards for worker's to work in compliance.
16	Employers to be engaged with workers on developing safe practices and procedures in a respectful/collaborative manner to shift the safety culture.

8. Roofing Not a Skilled trade

Category: People, Process, Tools & Machines, Measures, Environment, Culture

- a) Roofing at present is not a skilled trade.
- b) Often do not know if a worker has required skills/training.

Item	Suggested Controls and Solutions
1	Have Skills Ontario make roofing a skilled trade.
2	Skilled trade verifies that you have completed the required accreditation (basic and otherwise).
3	Skilled trade verifies specific skills and know worker was properly trained by an approved training provider.
4	Make the trade a Red Seal trade.
5	Develop a transferable skill card indicating hours of experience into a tiered approach.
6	Develop an apprenticeship program.
7	Utilize Skills Pass with QR code to monitor training certification.
8	Set an industry standard for entry level courses with renewal requirements.
9	Online database of certificates/training.

9. Labour Shortage

Category: People, Process, Tools & Machines, Measures, Environment, Culture

- a) There is a severe shortage of qualified labour.
- b) Older workers and immigrants are the only workers available at the moment.
- c) The Roofing trade has low barriers to enter.
- d) Roofing trade is a labour intensive, high risk work.
- e) Piece work attitude – they don't have time for safety.
- f) Easy entry and (barriers to entry are low)
- g) High pitch vs low pitch roof can be dangerous by design of the house.
- h) Sub-contractor conditions need to be addressed - Pay scale and Working conditions.
- i) Working conditions have changed – training and skills have not kept up.

Item	Suggested Controls and Solutions
1	Tap labour outside of Ontario.
2	Labour unions have resources and training centers based on sites outside of Canada.
3	Create an incentive program to encourage people to participate.
4	Greater promotion of the trade is required to attract new workers.
5	Make roofing a Skilled trade with license and apprenticeship then pay accordingly.
6	Increase pay for trade.
7	Utilize a more immigrant focused recruitment promotion.
8	Government investment into the trade and promotion for recruitment attracting workers.
9	Program and mentorship with experienced workers re transfer of skills etc. to help from job to job.
10	Licensed trade – recognized for having qualified apprenticeship workers and transfer the trade.
11	Licensed trade – confidence to what they know, experience and are licensed to develop some level of confidence.
12	Implement training and development requirements with mandatory training renewals and refresher training.
13	Have Union Associations in different jurisdictions, train in ON standards, assist with visa and legal documentation to recruit and prepare workers.
14	Develop a roofer profile to attract workers into the trade.
15	OYAP program to target school age (like they did for welding recently).
16	Implement a Provincial Skilled Trade promotion and profile of the roofer.
17	Map out the benefits of the trade in recruitment programs.
18	Develop a profile of safe employers to work for as part of recruitment.
19	Hold job fairs at training centers.
20	Contact point of recruitment needs to be convenient and easily accessible.
21	Develop an apprenticeship program to increase interest in the trade.
22	Develop and implement a recruitment initiative to make entering the trade more desirable - including the pursuit to make it safer and that it pays well.

10. Piecework

Category: People, Process, Tools & Machines, Measures, Environment, Culture

- a) Piecework prioritizes productivity over safety.
- b) Working fast doesn't always mean someone is working unsafely.
- c) More pressure is placed on worker.
- d) Prioritizes productivity over safety.
- e) Training front end early and often.
- f) Safety record flows into tiered system (builder, contractor, sub-contractor, and worker).

Item	Suggested Controls and Solutions
1	Allows builder to know their fixed cost
2	Need to tie in safety to piecework
3	Need to build a business case for safety as an investment that benefits productivity.
4	Safety time and investment needs to be factored into the job (vs trying to convince workers to over time)
5	Employer's to be more involved in enforcement of standards to reduce the negative effects of piecework, including rushing and a transactional safety culture.

11. Weather

Category: People, Process, Tools & Machines, Measures, Environment, Culture

- a) Work in winter is dangerous.
- b) Roofing work is often required in winter.
- c) Basement is poured late in the year and house must be finished in winter.
- d) Frost = slippery work conditions.
- e) More equipment on site like cherry pickers.
- f) Footwear with cleats.

Item	Suggested Controls and Solutions
1	Scaffolding and cherry pickers (MEWP) to limit risk of ladders slipping
2	Foot cleats in certain locations

Recommendations and Conclusions:

The controls and solutions listed in this document are for the top primary causal factors that may contribute to workers falling, while working at heights, in the Roof Shingling trade in the low rise residential construction sector. Given recent fatalities in the sector, along with injury/fatality data available from the Workplace Safety and Insurance Board (WSIB) for Residential Roofing, it is important that specific solutions targeting systemic weaknesses be implemented immediately.

Based on the list of controls/solutions provided by the subject matter experts from industry, research and government (regulator), the following five action items are recommended:

- 1. Address the lack of political will through greater enforcement of non-compliance and collaboration to focus on top industry issues identified in this workshop report (i.e. underground economy, equipment use and practices)**
 - ✓ Sector must address the identified key issues impacting safety in the sector.

- 2. Promotion of industry specific fit for duty, mental health and wellness resources.**
 - ✓ Provide tailored support to workers, supervisors and other support staff.

- 3. Greater implementation and enforcement of trade specific working at heights training.**
 - ✓ Trade and or site specific training and practices to be adopted and enforced.

- 4. Address the negative impacts of the piecework culture**
 - ✓ Adverse effects of the piecework culture must be addressed.

- 5. Classify Roof Shingling as a mandatory, licensed, skilled trade.**
 - ✓ To be adopted at the Provincial level

The above five recommendations provide a systemic foundation for reduction in fall related incidents while working at heights in the roof shingling trade. If ignored, the solutions listed for the top ranked primary causal factors will just serve as “band-aid” solutions. Based on the Swiss Cheese model of accident causation, risk assessment and root-cause analysis theory, we must focus on the causal factors and not just the symptoms.