2017 SWANA Safety Awards
Biggest Safety Improvement

Technical Division - Collection & Transfer

City of Saskatoon - Solid Waste Collection
A Safety Culture Shift

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EXECUTIVE SUMMARY
The City of Saskatoon provides solid waste collection and disposal operations for residents and commercial businesses in Saskatoon, Saskatchewan, Canada. The population of Saskatoon is approximately 250,000 and includes 68,000 single-family dwellings and 35,000 multi-family dwellings for which waste collection services are provided. Solid waste collection is fully automated with side loader trucks and roll-out carts for the single-family residential sector and fork lift trucks and metal bin service are provided for multi-family properties and commercial customers. Collections occur on the front street and back lanes at various locations throughout the city and all waste is disposed of at the City of Saskatoon Waste Management Centre (Landfill).

1. SAFETY PROGRAM
   Describe your safety program

The City of Saskatoon has a comprehensive Health & Safety Management System (HSMS) that provides the foundation for health & safety for all of the Departments, Divisions and Sections of the City. The Solid Waste Collection section is part of the Public Works Division, Transportation & Utilities Department that is developing a division specific health & safety program based on the guiding principles of the corporate HSMS. The Health & Safety Management System is comprised of the following categories:

- Leadership
- Hazard Identification, Assessment & Control
- Incident Investigation
- Inspection Program
- Education & Communication
- Emergency Response
- Health & Wellness
- Program Administration

Annual safety goals, targets and key activities to further develop and improve our HSMS are set jointly by management and the division Occupational Health & Safety Committee (OHC) and are communicated to all work groups.
2. LEADING & LAGGING INDICATORS

How do you measure results for your safety program?

The success of the health & safety program is measured by both leading and lagging indicators.

Leading indicators are the pro-active, intentional activities that we engage in to ensure effective and timely safety communication and hazard identification & control. Leading indicators focus on future health and safety performance with the intent of continuous improvement.

Leading indicators include:

- Monthly Safety Meetings
- Daily Toolbox Talks
- Crew Visits and/or Ride Along (conducted by management)
- Work Observations (conducted by supervisors)
- Tailgate Meetings (field hazard assessment)
- Job Safety Analysis (JSA) (formal hazard assessment)
As we are still developing and implementing our HSMS, our leading indicators are focused on compliance and continuous improvement. Minimum targets and accountability are established but the focus is not on the “number”; rather focus is on the quality of the communication and the actions behind the “talk”. It is the actions behind the paper that ultimately drives down our incident and injury rates, and improves our safety culture. For example; observed compliance of utilizing a spotter in high risk pick-up locations. Management supports the use of extra staff to assist in reversing and operators call for assistance without fear of delay in getting route completed.

Lagging indicators measure the end result of our HSMS; processes, policies and procedures. They are a record of events that have already happened and can be useful in identifying trends in past performance. At the City of Saskatoon they are used as an accepted benchmark across similar industries/municipalities.

**Lagging indicators include:**

- Number of Incidents
  - Lost Time Injuries (LTI)
  - Medical Aid Injuries (MA)
  - First Aid Injuries / Incidents (FA)
  - Near Misses (NM)
  - Motor Vehicle Collisions (MVC)

- Injury Frequencies & Severities
  - Lost Time Injury Frequency (LTIF)
  - Medical Aid Injury Frequency (MAIF)
  - Injury Severity (IS)

Targets for the number of incidents or injuries and incentives for reporting are NOT part of our HSMS. These kind of approaches are counter-intuitive to a positive safety culture and drive reporting of incidents and hazards underground. The Solid Waste Collection group encourages the reporting of all incidents and injuries no matter how minor as they are viewed as a learning opportunity for improving our health & safety performance and safety culture.

### 3. KEY PERFORMANCE INDICATORS

*What results did you use as a baseline for comparison to determine improvement between 2015 and 2016?*

Safety performance is measured and reported on a combination of both leading and lagging indicators. Together, leading and lagging indicators provide a solid, bigger-picture perspective on what is and is not working in our HSMS.
Key Performance Indicators that are reported on a monthly basis are outlined in question (2). As indicated previously, targets are not set for lagging indicators, a downward trend is indicative of improvement in performance.

Targets and expectations for pro-active, intentional health & safety activities (leading indicators) are set jointly by management and the Occupational Health Committee. Managers, Superintendents, Supervisors and Employees are held accountable to fulfill their role in the implementation and participation in leading indicator activities. The following chart outlines the target and expectations set for each activity in 2015 and 2016 and demonstrates the results sought to demonstrate improvement.

### Monthly Tracked Leading Indicators – Solid Waste Collections

<table>
<thead>
<tr>
<th>Monthly Safety Meeting</th>
<th>2015 Expectation / Target</th>
<th>2016 Expectation / Target</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Frequency – 1 meeting/month per supervisor</td>
<td>• Frequency – 1 meeting/month per supervisor</td>
</tr>
<tr>
<td></td>
<td>• Scheduled</td>
<td>• Scheduled</td>
</tr>
<tr>
<td></td>
<td>• Supervisor leads meeting</td>
<td>• Supervisor leads meeting</td>
</tr>
<tr>
<td></td>
<td>• Management present at meeting</td>
<td>• Management present at meeting</td>
</tr>
<tr>
<td></td>
<td>• Sign-in of all attendees</td>
<td>• Minutes to include:</td>
</tr>
<tr>
<td></td>
<td>• 80% compliance for the year</td>
<td>o Agenda</td>
</tr>
<tr>
<td></td>
<td>• Baseline: 10 safety meetings</td>
<td>o Monthly incident review</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o Researched topic (supporting information attached to minutes)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o Sign-in of all attendees</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 100% compliance for the year</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Target: 12 safety meetings</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tool Box Talk</th>
<th>2015 Expectation / Target</th>
<th>2016 Expectation / Target</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Frequency – 3 per week</td>
<td>• Frequency – 1 per day</td>
</tr>
<tr>
<td></td>
<td>• Written by supervisor</td>
<td>• Meeting conducted by supervisor</td>
</tr>
<tr>
<td></td>
<td>• Reviewed &amp; initialed by staff</td>
<td>• Minutes to be completed</td>
</tr>
<tr>
<td></td>
<td>• Checked for compliance during Crew Visits</td>
<td>o Sign-in of all attendees</td>
</tr>
<tr>
<td></td>
<td>• 80% compliance for the year</td>
<td>• Checked for compliance during Crew Visits</td>
</tr>
<tr>
<td></td>
<td>• Baseline: 62 toolbox talks reviewed</td>
<td>• 100% compliance for the year</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Target: 130 toolbox talks held with staff</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tailgate Meeting</th>
<th>2015 Expectation / Target</th>
<th>2016 Expectation / Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Field Hazard Assessment)</td>
<td>• Not conducted</td>
<td>• Completed for high risk and/or tasks that deviate from normal operations</td>
</tr>
<tr>
<td></td>
<td>• Baseline: zero</td>
<td>o As identified through hazard assessment process; JSA development</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 50% compliance for the year</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Target: 6 tailgate meetings</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Work Observation / Crew Visit (Ride Along)</th>
<th>2015 Expectation / Target</th>
<th>2016 Expectation / Target</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Frequency – 2/month per Supervisor</td>
<td>• Frequency – 2/month per Supervisor</td>
</tr>
<tr>
<td></td>
<td>• Frequency – 3/month per Superintendent</td>
<td>• Frequency – 3/month per Superintendent</td>
</tr>
<tr>
<td></td>
<td>• Frequency – 1/month per Manager</td>
<td>• Frequency – 1/month per Manager</td>
</tr>
<tr>
<td></td>
<td>• 80% compliance for the year</td>
<td>• 100% compliance for the year</td>
</tr>
<tr>
<td></td>
<td>• Baseline: 48 work observations/crew visits</td>
<td>• Target: 60 work observations/crew visits</td>
</tr>
</tbody>
</table>
4. LEADING & LAGGING INDICATOR TRENDS

How did you measure the safety improvement that you achieved in 2016?

A downward trend in lagging indicators such as injury frequencies and the number of recordable incidents indicate a positive movement towards achieving our ultimate goal of zero harm / zero injuries. The chart below shows the decrease achieved in each of the categories for 2016 as compared to 2015.

![Incident Trending Chart](image)

**Figure 2: Incident Trending**

In addition to a reduction in the number of incidents, there was a 76% reduction in Lost Time Injury Frequency (LTIF) and a 97% reduction in Injury Severity (IS) from 2015 to 2016.

As part of our measurement for improvement, specific types of incidents are tracked for trends and to determine if corrective actions that have been implemented have been effective in reducing the number and severity of incidents. The table below identifies the number and type of Solid Waste Collection motor vehicle incidents that occurred in both years. Overall there was 43% reduction in the number of incidents involving the operation of Solid Waste Collection vehicles and equipment.
### TABLE 1: SOLID WASTE COLLECTION - MOTOR VEHICLE INCIDENTS 2015 AND 2016

<table>
<thead>
<tr>
<th>Motor Vehicle Incidents - Types</th>
<th>2015</th>
<th>2016</th>
<th>% Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overhead Lines</td>
<td>14</td>
<td>7</td>
<td>50</td>
</tr>
<tr>
<td>Vehicles*</td>
<td>10</td>
<td>6</td>
<td>40</td>
</tr>
<tr>
<td>Property Damage**</td>
<td>8</td>
<td>5</td>
<td>38</td>
</tr>
<tr>
<td>Trees</td>
<td>4</td>
<td>3</td>
<td>25</td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>Total</td>
<td>42</td>
<td>24</td>
<td>43</td>
</tr>
</tbody>
</table>

*Includes motor vehicle collisions and/or damage to parked vehicles

**Includes fences, garages, poles, garbage enclosures

Specifically, incidents involving overhead lines were reduced by 50%, incidents involving vehicles (whether they were in motion or parked) were reduced by 40%, property damage incidents (damage to fences, garages, poles and/or garbage enclosures) were reduced by 38%, incidents involving overhanging trees and branches were reduced by 25% and all other incidents not included in the above-mentioned categories were reduced by 50%.

In addition to the reduction in the number of property damage incidents in 2016, we realized a significant reduction in the number of claims submitted and the corresponding financial settlements of 71% and 75% respectively.

As outlined in question (3), improvement in our leading indicators were measured not just in compliance from a number perspective, but also around the quality of the activity and documentation. Management commitment was demonstrated by their attendance at monthly safety meetings and by the time they spent in the field with their staff on a ride along / crew visit. Communication improved through a more effective toolbox talks; 2016 shifted from a pre-written toolbox talk that staff gave a cursory glance and initialed to a dedicated time with face-to-face communication with staff addressing issues, reviewing incidents and developing strategies for improvement.
5. PERFORMANCE IMPROVEMENTS

To what do you attribute the improvement in your safety performance in 2016?

“Confront the most brutal facts of your current reality, whatever they might be.”

Jim Collins, Good to Great

In 2015 and prior, Collections was facing challenges in regards to its safety culture. There was a perception that the completion of the daily paperwork was sufficient to showing support to the safety program. That had a detrimental implication for the effectiveness of the hazard identification & control program and as a result leading indicators were not effectively driving down lagging indicators.

A quick safety culture check-in indicated there was a perception of fear regarding the reporting of incidents and that they were only to support the laying of blame. New and experienced operators were provided with very little training or assistance in the field and incidents were common occurrences. Back lane collections posed unique challenges with narrow lanes, overhanging branches, overhead lines, and garbage carts placed too close to fences or other obstacles, often resulting in property damage and downtime. The fleet was aging, breakdowns occurred frequently, and operators were often frustrated with their work conditions. Acceptance of prevalent at-risk behaviour had resulted in increasing incident and injury rates.

Figure 3: Back Lane Collection Challenges
In 2016, a three prong approach was taken to safety leadership and employee engagement; *Assessment, Engagement and Empowerment.* The plan provided a platform for the engagement and participation of key stakeholders; management, supervisors, and operators (staff). Focus was put on leadership and employee engagement to overcome perceptions and barriers to a positive and ongoing evaluation of safety culture. Time and resources were dedicated to the implementation of quantitative incident reduction strategies. A dedicated resource was assigned for field support in the implementation of key safety initiatives. This individual provided field level involvement with the operators and acted as a liaison between them and management to identify barriers, improve ‘upward and downward’ communication, and assist in resolving issues.

Throughout this change process, multiple opportunities for improvement were identified and effectively implemented. The sections below provide insight into some of the changes that occurred.

- **MANAGEMENT COMMITMENT**
  - **Leadership & Accountability:**
    - Presence in the field with staff through crew visits and ride along on daily routes
    - Active and visible role in monthly safety meetings and daily toolbox talks
    - Visible support and communication to negate the perception of “rushing” to get the job done
    - Accountable for the implementation of recommended corrective actions identified through effective incident investigation and hazard reporting
  - **Resources:**
    - Dedicated Operations Superintendent in the field to provide one-on-one coaching to supervisors and employees on the implementation of safety activities and development of the HSMS
    - Dedicated time to engage in safety activities; scheduled time for morning toolbox talks
    - Implementation of supervisors to assist in the field for spotting operators when reversing in high risk areas

- **COMMUNICATION**
  - **Daily Toolbox Talks:**
    - Moved from a one sentence message on a piece of paper whereby operators would initial their names on a sign-in sheet before heading out for the day to an effective daily meeting
• Discussion of meaningful and relevant health & safety topics; SWANA Safety Monday
• Safe environment for the review of incidents and corrective actions; removal of fear of blame or shame
• Opportunity to share frustrations, lessons learned, and brainstorm possible solutions for improvement

• HAZARD IDENTIFICATION
  o Critical Task Inventory:
    Developed as the result of operators sharing specific challenges and issues that were happening in the field. Entailed the active involvement of management, supervisors and operators.
    ▪ Prioritized job tasks that were ranked as high risk; resulting in the development of Job Safety Analysis’ (JSA) and Safe Work Practices (SWP)
    ▪ Engaged Waste Bylaw enforcement officers to approach property managers and commercial customers with alternate garbage bin placement to reduce hazards or risk potential of incident when conducting a pick up
  o Tailgate Meetings:
    ▪ Implementation of field hazard assessment when engaging in the high risk activities that were identified through the formal hazard assessment process (Critical Task Inventory)
    ▪ Supervisor and operator identify hazards in the field; overhead lines, congestion, environmental, traffic and document controls put in place to reduce the risk of incident – this was never even a consideration to stop & think about how to approach a pick-up if something had changed from the “normal”
  o Safe Operating Procedures:
    ▪ Reversing Procedure – Implementation of a spotter (supervisor or another operator) to assist when having to reverse into traffic or out of a congested area
  o Hazard Reporting:
    ▪ Operators proactively call in and report low overhead lines or overhanging branches, resulting in a reduced potential for damage to branches, trees and equipment
      • Communication with utility service providers was established and low overhead lines were required to be raised before operators would return to that location to collect
      • A tree trimming contract was also utilized for managing overgrown trees in the back lane
• TRAINING
  o Management & Supervisors:
    ▪ SWANA Managing Collection Systems
      As a result of this training, numerous opportunities for improvement were
      identified. Management then implemented several changes based on industry
      best practices and lessons learned in the course.
  o Operators:
    ▪ Development of comprehensive in-house three week training program; utilizing
      the knowledge and experience of training department, supervisors and key
      operators
      • Combination of classroom and practical field experience
      • Graduated program for skill development; show, tell, do philosophy
      • Multiple key proficiencies/competencies evaluated and documented by
        field trainers; checklists and approvals
      • Consistency in the delivery of information and transfer of knowledge
        and skills

• EQUIPMENT
  o Staff involvement in specifications for new equipment
    ▪ Improved air ride seating (reduce potential ergonomic related injuries)
    ▪ Diamond grip on ladders, steps and running boards (reduce potential slips)
    ▪ Improved noise reduction measures
    ▪ Improved in-cab air quality
    ▪ Installation of back-up cameras, improved warning lights & bars, signage,
      mirrors and spill kits

![Figure 4: New Front Fork Truck](image-url)
Overhead Lighting Package
During the winter months, early morning garbage collection is conducted in the dark and operators were not able to see low overhead lines or tree branches in the back lanes with the existing lighting packages on the trucks. New lighting was installed.

FIGURE 5: BACK LANE – BEFORE LIGHTING IMPROVEMENTS
FIGURE 6: BACK LANE – AFTER LIGHTING IMPROVEMENTS

Pincher Arm Package
With different sizes and makes of garbage carts, it wasn’t uncommon for carts to slip or fall into the hopper. Modifications to the pincher arms to improve the grip and reduce the number of times that carts would fall into the hopper was implemented.

- Reduced the number of times that an operator was required to climb up on the ladder and attempt to retrieve a fallen container
- Decreased the number of slips (on the ladder) and strain/sprain injuries associated with this activity

FIGURE 7: PINCHER ARM IMPROVEMENTS
6. SAFETY AS A VALUE

*Why do you think your safety program deserves this improvement award?*

The City of Saskatoon – Solid Waste Collection has not completed their journey in improving their health and safety program; we will never be done, as realizing excellence never ends. But through the joint efforts of our management and staff we have engaged in changing a safety culture that was reactive and based on blame and fear to one that is becoming independent and pro-active.

Our statistics demonstrate a significant and steady improvement and “buy in” for safety from a management level to those in the field. From 2015 to 2016, we have realized significant reductions in incidents and injuries (lagging indicators) and have increased and improved our intentional safety activities (leading indicators). But it is not just about the statistics and the paperwork. It is about the culture, the people.

The Solid Waste Collection group has started a journey in which safety is not just a priority… since priorities change, give way to other priorities, and are driven by external circumstances.

Instead, safety is becoming a value and we will continue to engage in our core principles and activities to further instill safety as a core value.

We are and will continue to:

- Be responsible for the safety of others
- Improve the quality of our safety conversations; safety meetings, toolbox talks, and tailgate meetings
- Build safety into every conversation
- Engage workers and build trust
- Coach safety behaviours at all levels of the organization; management, supervisory and workers
- Tie safety to employees’ personal core values

**CONCLUSION**

The City of Saskatoon – Solid Waste Collection is committed to the continuous improvement of our health and safety program and the building of a positive, pro-active safety culture.

We wish to thank you for your consideration of our application for the *Biggest Safety Improvement Award*. 