New Code Update pg 3

Powerline Awareness campaign pg 6
Message from the Vice-President, Regulatory Affairs

ESA’s Safety Management Framework will positively impact electrical safety in Ontario...

ESA’s vision of an Ontario free of electrical fatalities and serious injury, damage or loss is supported with a commitment to a 30% reduction associated with its 5-year strategic business plan. An integral component to achieving this goal is the application of a Safety Management Framework (SMF) that introduces “safety decision-making” into our business processes.

SMF ensures that business initiatives are evaluated and prioritized based on the following safety components to prevent electrical incidents:

- **Risk** – based on monitoring statistics, data, trends, and stakeholder feedback to identify and prioritize potential hazards.
- **Cause** – based on analysis to define the root cause of electrical risks.
- **Response** – based on assessment of resources and methods required to reduce risk.

ESA currently uses data from the Ontario Fire Marshal’s Office, the Ministry of Labour, and from electrical incident investigations, and has worked to prevent incidents by focusing safety efforts in the following areas:

- Reducing power line contact among non-electrical workers.
- Reducing electrical contact incidents involving electrical workers.
- Increasing public risk awareness of electrical hazards around the home; and
- Educating the public on the importance of using Licensed Electrical Contractors.

To enhance our SMF we are working to expand our incident data collection methods and analysis. Hazards and incidents will be quantified by frequency, severity, likelihood and other risk factors. In addition, ESA’s analysis will be shared with stakeholders through a collaborative consultation process to create a public safety risk map. This map will drive decision-making on policies, work practices and safety initiatives.

By leading the introduction of a SMF in Ontario, ESA will improve its ability to identify and design safety initiatives that will make a measurable difference to safety in Ontario.

Registrar’s Report on Licensing

On September 25th ECRA hosted the 2nd Annual Registrants’ Meeting in Cambridge, attended by master electricians and electrical contractors. The meeting agenda included:

- A status update of the licensing program
- A review of enforcement activities
- A summary of the 2008 “Plug In Safely – Hire a Licensed Electrical Contractor” consumer awareness campaign
- A “Don’t Work Live” safety presentation by Dave Heron, ESA’s Technical Advisor for the Northern Region
- A presentation by Bill Bowman from the WSIB, focusing on Safety in the Workplace
- A question & answer session where attendees could pose licensing questions to the Registrar and ECRA Board members.

ECRA Board members include representatives of electrical contractors, utility contractors, municipalities, consumers, and ESA.

Information presented at the Registrants’ meeting is posted on the ECRA website at www.esaecra.info.
In this Brief I believe contractors need to know...

1. ESA’s 5-year strategic direction commits the business to reduce electrical deaths by 30%. Increased prevention, leadership, and business excellence will drive ESA to influence safety rules and regulations, increase engagement of safety partners, and continue with the implementation of a Safety Management Framework.

2. On September 17th ESA conducted its 9th Annual General Meeting. John Wiersma, Chair celebrated ESA efforts to “Step Up Safety” as a leader in public electrical safety. The Annual Report is posted on our www.esasafe.com website (Stats, Facts & Reports).

3. In our ongoing effort to keep the electrical industry informed of important Codes, Standards, and safety initiatives, ESA will distribute the Plugged In newsletter to all Master Electricians in addition to Licensed Electrical Contractors.

4. The ESA “Look Out” pilot campaign has been distributed to over 500,000 Ontario households to encourage homeowners to check for hidden electrical hazards, and to contact a Licensed Electrical Contractor.

---

**New Code Update**

In the previous two issues of Plugged In, we reviewed changes under consideration for the 24th Edition of the Ontario Electrical Safety Code set to launch in early 2009. Provided below are descriptions of additional potential changes that will impact contractors and the public.

- The most significant change coming may be new Rule 26-712 (g) and (h) requiring all receptacles in homes to be tamper-resistant and marked as such. Tamper-resistant receptacles are designed to protect children from injuries when they try to insert keys and other conductive objects into them.

- New Rule 75-239 sets out the requirements for the manufacture, marking, guying and framing of composite (Fiber-Reinforced Polymer) poles. This new rule reflects current industry practice and permits the use of fiber-reinforced poles.

- New Rule 86-306 sets up the requirements for receptacles for electric vehicle charging equipment that should be supplied by a separate branch circuit.

- Amended Rule 10-204 addresses the size of the grounded conductor (neutral in some cases) which will carry the same fault current as the bonding conductor in Table 16.

- Amended rule 68-050 requires metal parts of the pool and other non-electrical equipment associated with the pool to be bonded together and to the non-current carrying parts of the electrical equipment associated with the pool regardless of the location.

The New Code training programs for contractors is under development, and locations and dates will be announced once these details have been finalized.
Ground Fault Protection

Arcing ground faults in solidly grounded electrical systems or components can cause severe damage to electrical equipment and premises. To address this issue, the Ontario Electrical Safety Code (OESC) requires ground fault protection.

Ground fault protection (GFP) devices comprise a system that is intended to protect equipment. GFP controls or interrupts ground fault current or voltage-to-ground in a circuit or system where it has been installed. This protection is provided at current levels less than those required to protect conductors from damage through the operation of a supply circuit overcurrent device. This is significantly different from a Ground Fault Circuit Interrupter which is a device strictly used to protect against shock.

When is GFP required? The OESC Rule 14-102 requires ground fault protection be provided to de-energize all normally ungrounded conductors of a circuit that faults to ground, where one of the following circuit characteristics exists in solidly grounded systems:

1. 2000 Amp or more and rated 150 volts or less to ground; and
2. 1000 Amp or more and more than 150 volts-to-ground, but less than 750 volts phase-to-phase.

Diagram 3 of the OESC shows a variety of ultimate points of conductor de-energization in the event of a ground fault.

Figure 1. Points of Conductor De-energization

The * asterisk indicates the ultimate point beyond which the downstream ungrounded circuit conductors shall be de-energized in the event of a ground fault in the circuit fed by such conductors.

Additional information can be found in Bulletin 14-6-0, Ground Fault Protection.

ESA publishes the Ontario Electrical Safety Report on a yearly basis with input from industry partners such as the Coroner’s Office, the Ministry of Labour (MOL), the Office of the Fire Marshal (OFM) and the National Work Injury Statistics Program (NWISP).

The Report provides statistics on fatalities and injuries of an electrical nature, and electrical fire incidents causing death, injury, and damage. Data from this report is used to identify areas where ESA should focus prevention, inspection and enforcement activities.

Ontario’s reported electrocution rates (Figure 1) show that the electrocution rate has declined over the past 10 years. Contact with overhead powerlines is the leading cause of electrical deaths and has been a primary focus area for ESA’s safety awareness campaigns.

Occupational electrocutions outnumber non-occupational electrocutions (Figure 6). Occupational fatalities have exceeded seven on an annual basis with the exception of 2002 (three fatalities) and 2007 (four fatalities).
Highlights from the 2007 Ontario Electrical Safety Report

The entire report can be viewed on the www.esasafe.com website, under Stats Fact & Reports.

From 2003 to 2007 electrical incidents reported to the MOL have decreased 33% from incidents that were reported from 1998 to 2002 (Table 16).

<table>
<thead>
<tr>
<th>Year</th>
<th>Fatalities</th>
<th>Critical Injuries</th>
<th>Non-Critical Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>9</td>
<td>34</td>
<td>52</td>
</tr>
<tr>
<td>1999</td>
<td>9</td>
<td>34</td>
<td>83</td>
</tr>
<tr>
<td>2000</td>
<td>7</td>
<td>30</td>
<td>73</td>
</tr>
<tr>
<td>2001</td>
<td>9</td>
<td>34</td>
<td>86</td>
</tr>
<tr>
<td>2002</td>
<td>2</td>
<td>26</td>
<td>84</td>
</tr>
<tr>
<td>2003</td>
<td>8</td>
<td>25</td>
<td>82</td>
</tr>
<tr>
<td>2004</td>
<td>7</td>
<td>21</td>
<td>84</td>
</tr>
<tr>
<td>2005</td>
<td>7</td>
<td>16</td>
<td>97</td>
</tr>
<tr>
<td>2006</td>
<td>8</td>
<td>18</td>
<td>112</td>
</tr>
<tr>
<td>2007</td>
<td>4</td>
<td>22</td>
<td>97</td>
</tr>
</tbody>
</table>

More electrocutions occur with electricians than with any other occupation as demonstrated in Table 14 and Figure 14. In the last 10 years there have been six fatalities among electricians, and three fatalities involving electrical apprentices.

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Total Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apprentice</td>
<td>3</td>
</tr>
<tr>
<td>Crane-operator</td>
<td>1</td>
</tr>
<tr>
<td>Electrician</td>
<td>6</td>
</tr>
<tr>
<td>Labourer</td>
<td>1</td>
</tr>
<tr>
<td>Maintenance</td>
<td>2</td>
</tr>
<tr>
<td>Mechanic</td>
<td>1</td>
</tr>
<tr>
<td>Millwright</td>
<td>2</td>
</tr>
<tr>
<td>Rider</td>
<td>1</td>
</tr>
<tr>
<td>Supervisor</td>
<td>2</td>
</tr>
<tr>
<td>Volunteer</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>29</strong></td>
</tr>
</tbody>
</table>

ESA continues to work to raise the awareness of risks associated with working on live electrical equipment. Data reported in 2007 reinforced that fatalities associated with inadvertent contact with electrical equipment outnumbered fatalities reported where workers were knowingly working on live electrical equipment (Figure 12).
Incidents related to electrical powerlines in Ontario from 2001 to the first half of 2007 represent more than 50% of the total reported electrical occurrences. In this time period there have been 1,431 powerline incidents in Ontario, and 33 reported fatalities from overhead powerline contact. This is a key area of focus for ESA as we pursue our 5-year strategy to reduce fatalities by 30%.

Data on powerline incidents is used to define ESA's targeted powerline safety campaigns to prevent electrical incidents in high-risk areas. Data identified the following areas as the most hazardous:

- contact by dump trucks, cement trucks and garbage trucks
- contact during roofing, eaves, trough or exterior work on buildings
- contact during construction or demolition with cranes, boom trucks and forklifts
- contact when trimming, cutting or planting trees
- contact from excavators, bulldozers, drilling rigs, and portable augers during construction trenching, demolition, and landscaping.

A lack of awareness and understanding of the potential hazards associated with contacting powerlines is the primary cause of these incidents. ESA has been working with Local Distribution Companies to remind Ontarians of the potential hazards associated with overhead powerlines, and to re-educate them on the importance of following basic safety steps to stay safe at Home, at Work and at Play.

The 2008 target is roofers, eavestrough and siding installers with a reported six deaths from 2001 to 2007 due to contact with powerlines. Campaign materials were provided to 1,200 companies listed as offering these services to residential and ICI customers. Direct mail was used to distribute information cards, stickers (for scaffolds, vehicles, and ladders), and “Look Up/Look Out” tags for extension ladders. The key message caution workers to be aware of overhead powerlines and to avoid direct contact or contact with ladders or scaffolding. Survey efforts at the conclusion of the campaign identified that 70% of respondents recalled this campaign.

The 2007 introduction of a campaign targeted at dump truck operators has exceeded expectations by attracting the attention of the construction industry, municipalities, road builders, in addition to independent dump truck operators and brokers. Campaign materials included a two-sided information card, two different versions of window stickers for the trucks, and a bright green roadway sign to warn drivers of the presence of overhead powerlines on the construction site. Survey activity reported that 80% of respondents recalled seeing the campaign.

To view ESA’s powerline awareness campaigns visit the Powerline Safety section of our website at www.esasafe.com.
Product Safety Recall & Alerts

The most recent product safety alerts and recall notices are also posted on the front page of the ESA’s website at www.esasafe.com.

RCL08-38  Schneider Electric Recalls Type 1 NEMA Size 2 Enclosures Due to Cover Latching Hazard
The removable cover of the enclosure may not be adequately secured to the box due to a manufacturing nonconformance. Under certain short circuit conditions the cover may not contain the arcing event as required by the listing standards.

RCL08-39  Greenway Home Products Recalls Countertop Water Dispensers Inclusive of Hot Water Feature Due to Potential Fire and Shock Hazard
The affected models of countertop water dispensers were produced with a base with openings. This construction would permit dropping of molten metal etc., on the surface underneath the equipment and may pose a potential for shock and possible smoke/fire hazard. There are approximately 45,373 units in Canada.

RCL08-44  Gardner Bender Recalls Electrical Splice Due to Risk of Shock and Fire
When crimped as instructed, the splice can fail to hold the wires together adequately, posing a shock and fire hazard to consumers.

Enforcement Update

For the first half of Fiscal Year 2009 (April – September, 2008), Electrical Safety Authority (ESA) logged 634 enforcement complaints.

634 Enforcement Complaints generated this activity:
✓ 362 Notices of Violation (administrative penalties) were issued
✓ 328 Enforcement inspections have been conducted
✓ 65 complaints are still active, pending further investigation
✓ 39 Unlicensed persons are currently under investigation, involving 48 sites
✓ 12 Prosecutions against 12 unlicensed persons have now been completed consisting of 20 charges of working without an EC Licence; and
✓ 17 prosecutions are currently underway

Fines range from $250 to $1,250 per charge
Note: Fines are levied by the courts and paid to the Province

Details of Recent Convictions
• Kingston – a renovator was charged with working without an EC licence (kitchen wiring)
• Vanier – an unlicensed person was charged with working without an EC licence (wiring in a shopping mall)
• Nepean – an unlicensed person was charged with working without an EC licence (residential potlights)
• Kingston – a construction company was charged with working without an EC licence (crane hookup to generator)
• Vineland – a general contractor was charged with working without an EC licence (kitchen renovation)
• Cornwall – a fire protection company faces two charges of working without an EC licence (fire alarm panels)

Canada Mortgage and Housing Corporation (CMHC) onboard with the Ontario licensing requirement

CMHC offers financial assistance to those living in substandard dwellings who cannot afford to pay for necessary repairs. The CMHC approved upgrades to over 3,800 units in Ontario in 2007 through their assistance programs.

In response to complaints of unlicensed persons working on CMHC-funded projects, ESA recently met with CMHC representatives to clarify the licensing requirement. The CMHC has amended their process to permit only licensed electrical contractors to bid on work.
Scorecard to the end of the 2nd quarter, Fiscal Year 2009 (Apr 1 - Sept 30/08):

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td># of Licensed Electrical Contractors</td>
<td>6,768</td>
</tr>
<tr>
<td># of Licensed Master Electricians</td>
<td>7,875</td>
</tr>
<tr>
<td># of calls answered at the Service Centre</td>
<td>253,529</td>
</tr>
<tr>
<td># of inspections</td>
<td>250,120</td>
</tr>
<tr>
<td># of defects recorded</td>
<td>111,966</td>
</tr>
<tr>
<td># of Hazard Investigation requests</td>
<td>4,353</td>
</tr>
<tr>
<td># of General Inspection requests</td>
<td>6,994</td>
</tr>
<tr>
<td># of contractors participating in the Authorized Contractor Program</td>
<td>2,398</td>
</tr>
<tr>
<td>% of notifications created electronically through the On-Line Application system</td>
<td>19.4</td>
</tr>
</tbody>
</table>

ESA representatives are promoting OESC compliance and electrical safety ...:
- More than 250 inspectors, partners and contractors at the IAEI received information on 2009 CEC Code changes, CSA Z462, available fault current calculations, bus duct systems, tamper resistant receptacles and other new products.
- Over 1,300 government representatives, non-profit housing providers, and tenant leaders attended Ontario’s Non-Profit Housing Association conference where ESA shared information on CSS and Arc Flash Safety.
- Over 300 Ontario delegates received information on CSA Z462 and changes to the Canadian Electrical Code during CSA’s Z462 conference series on Workplace Electrical Safety. (A second session will be held in Toronto in the spring 2009).
- More than 23,000 building owners, property and facility managers, engineers, architects, and contractors attending PM Expo in December 2008 can collect information from ESA on the CSS and Arc Flash Safety.
- Contractor feedback from these sessions reinforced the industry’s interest in:
  - Gaining a better understanding of how to control arc flash hazards.
  - Addressing “Working Live or Don’t Work Live” policy issues through their Health & Safety programs.
  - ESA offers a workshop on “understanding PPE requirements” that focuses on arc flash hazards, links safety precautions to provincial Codes and regulations, and identifies PPE requirements. In addition, see ESA’s “Don’t Work Live” Health and Safety video at www.esasafe.com.
  - Reinforcing their support for the provincial Licensing initiative, and further encouraging enforcement efforts. ESA provides regular updates on the licensing initiative and enforcement at www.esaecra.info.

Next Issue
- New Code
- Enforcement
- New Code Training

We’d like your input. Please send your comments or story ideas to: plugged.in@electricalsafety.on.ca

Our Mission: To improve electrical safety for the well-being of the people of Ontario.