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Preventing crane safety incidents in the construction industry

Construction Work Health and Safety Research @ RMIT
May 2020

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rmit.edu.au/research/health-safety-research
### Purpose of this guide

Crane incidents are a critical issue in construction operations. They are often preventable and can result in significant injury, death, and financial losses. The use of cranes in construction operations is widespread, and it is essential to understand the factors contributing to crane safety incidents.

### The crane safety incident causation model

A crane safety incident causation model was developed to identify the factors contributing to crane safety incidents in the Australian construction industry. The model is designed to help in understanding the factors contributing to crane safety incidents. It is important to note that these factors do not occur in isolation and can affect each other. The model is broken down into three layers:

1. **Outer layer**: originating influences, which are the factors that contribute to the industry at large. These factors include regulatory, organisational, and community expectations.
2. **Middle layer**: shaping factors, which are the factors that shape the immediate incident circumstances. These factors are broken down into industry context factors, labour-related factors, and site factors.
3. **Inner layer**: immediate incident circumstances, which are the factors that contribute to the actual incident. These factors include worker factors, job requirements, and the management of the incident.

### How to use the model

The crane safety incident causation model can be used as a tool to support investigations into the factors contributing to crane safety incidents in the construction industry. It can help identify critical factors and provide a framework for investigating crane safety operations in construction workforces.

### Key findings

- **Regulatory factors**: Authorising officer, permits and standards, non-compliance with industry standards and regulations.

### Originating influences

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<th>Principal contractor's expectations</th>
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### Immediate incident circumstances

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<th>Materials/equipment factors</th>
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<th>No flat place due to reflective of situation</th>
<th>Operating unstable crane</th>
<th>Structural/mechanical failure of crane</th>
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<td>Lack of control of hazards</td>
<td>Non-compliance with manufacturer's instructions</td>
<td>Non-compliance with legislation</td>
<td>Overload safety technology</td>
<td>Underload with site plant being operated</td>
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