2.5 Electrocutions and Electrical-Related Injuries: Case Study

2.5 Case Study: Electrical-Related Injury

An arc flash event injured three workers in a pulp and paper manufacturing facility when they were replacing a power box in the electrical room. The following documents the chain of events.

One of the tasks during a scheduled, week-long shutdown of a pulp and paper facility was to replace an old paper machine power box. This task was assigned to two plant electricians, Electrician A and Electrician B.

On the first day, the maintenance supervisor asked Electrician A to gather the necessary parts for the assigned task. On the second day, several supervisors discussed procedures that should be followed if something went wrong during the shutdown. None of the supervisors had much electrical knowledge. Electrical hazards were not discussed and no supervisor conducted a hazard assessment of the work with the two electricians.

On the third day (day of the incident), a third electrician applied a ‘blue tag lockout’ to the paper machine, which de-energized the load side, but left the line side energized.

Later that morning, Electrician A and Electrician B began work on the panel. They were not wearing proper protective equipment and a supervisor was not present to oversee their work. They removed the panel doors from the cabinet and then removed cables mounted against the back panels with clips mounted behind the energized buses in an adjacent cabinet. While Electrician B was holding the cables up,
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Electrician A reached between two of the energized buses with a nut driver to remove a clip and touched the energized part, creating an arc flash. At the same moment, a co-op student walked into the room. The arc flash injured all three workers.

The facility had what appeared to be a comprehensive health and safety program. Both electricians had recently received arc flash training and were provided with arc-rated clothing. In addition, warning labels had been put up on all machines, including the paper machine being worked on. But none of the workers understood the information on the labels.

2.5.1 Causal Factors

The following gaps were identified in the safety framework as a result of the investigation. There is a need to:

- ensure work procedures and policies are implemented
- perform hazard assessments to ensure all preventative measures are taken to eliminate any dangers
- ensure workers understand the electrical equipment they are working on, what part of the machine is de-energized or remains energized, how to test for those conditions, and to check for warning labels on the machines
- ensure electrical safety training is conducted with all workers, including supervisors and that training results in a change in behaviour
- ensure supervisors review work to be performed and are satisfied that the work would be performed in a correct and safe manner